ENGINEERING NEWS-RECORD

Concrete dome built on a mound . . .

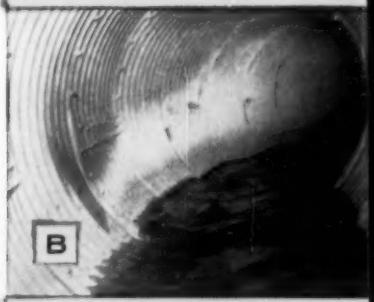
. . . becomes a roof when scooped out *p. 36*

A McGRAW-HILL PUBLICATION

E B POWER
UNIVERSITY MICROFILMS I
313 N 1 ST
ANN ARBOR MICH

LEFT: This 36-inch-diameter Armco Sewer was recently inspected in a mountain city.

WHICH ARMCO SEWER HAS BEEN INSTALLED 49 Years?



Hard to tell, isn't it?

ABOVE: Large diameter Armco Sewer installed in a midwest city.

LEFT: This Armco Storm Sewer in a midwest city is of 14-gage, 36 inches in diameter.

ABOVE: A large southern city installed this 30-inch-diameter Armco Sewer Structure.

Actually, you can't tell the age of an Armco Sewer just by looking at it. Armco Corrugated Metal Sewer Structures have an outstanding record for long, economical and efficient service.

But in case you are wondering, Armco Sewer (A) has been in service 39 years; sewer (B), 26 years; sewer (C), 49 years; and sewer (D), 28 years. How close did you guess?

Long life is not the only advantage of Armco Sewer Structures: Corrugated metal design provides ample strength for any loading condition. Long lengths speed up installation. Sturdy coupling bands assure tight joints and a continuous conduit. Choice of protective coatings and pavements solves corrosion and erosion problems. Wide size range meets capacity requirements. And unskilled labor can handle the job, saving money at every step.

Write now for complete data on your specific needs. Armco Drainage & Metal Products, Inc., 5456 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Armco Sewer Structures

ARMCO®

Galvanized Corrugated Metal Pipe and Pipe-Arch • Bituminous-Coated Galvanized Pipe and Pipe-Arch • SMOOTH-FLO Sewer Pipe • ASBESTOS-BONDED Pipe and Pipe-Arch • PAVED-INVERT Pipe and Pipe-Arch • MULTI-PLATE Pipe, Arch and Pipe-Arch

Allis-Chalmers LOW-COST Model D

BIG

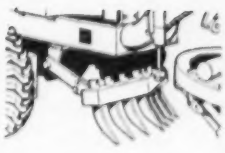
in power
in strength
in versatility

THE MODEL D GRADER HAS THE POWER to tackle bigger jobs. With either 50-hp gasoline engine or 50-hp diesel engine, there's extra torque and lugging ability for top performance on all projects.

BIG-GRADER DESIGN means long life for the Model D — regardless of the job. Strong, single-member main frame . . . husky drawbar and one-piece circle . . . work-boosting ROLL-AWAY moldboard . . . ground-gripping tandem drive . . . precision control . . . easy operation and simple servicing — all are plus performance advantages.

JOB-MULTIPLYING ATTACHMENTS make the Model D a *specialist* on many applications:—

ROLL-AWAY is an Allis-Chalmers trademark.



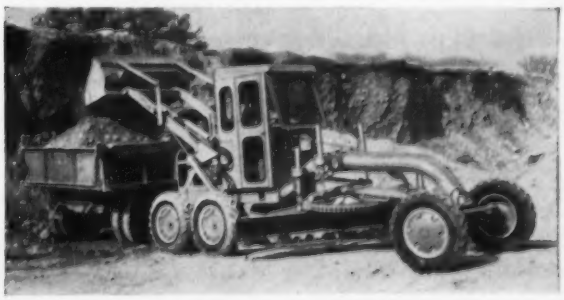
HYDRAULIC SCARIFIER — exclusive mid-ship mounting under D's heavy end for better steering, maximum traction and full penetration. With seven removable teeth, scarifier cuts a swath 27¾ in. wide.

ALSO output-boosting extras — rear-mounted ⅝-yd loader, shoulder maintainer, windrow eliminator, snowplow blades. Plus optional equipment — including power circle turn, shiftable moldboard, leaning front wheels, all-weather cab, heater, etc.

See the Model D at your Construction Machinery Dealer — headquarters for True Original Parts and Service.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



PIPE PILES

For C-I-P Concrete Piles

Foster Pipe Service Gives Big Job Savings

The job advantages of Foster Service on cast-in-place concrete piles really pay off. You can count on full quantities of the right kind of pipe for your job—delivered to your work schedule as promised.

Stronger spiral-weld pipe is ideal for cast-in-place concrete piles. It has been driven 134 feet to refusal without damage or distortion—is lightweight, easy to handle—drives straight without mandrel.

Foster specializes in all kinds of pipe for foundation piling—Spiral Weld, Electric Weld, Seamless and Lap Weld, in all diameters, all walls Write for driving logs and catalogs—let us quote you on your next job.

STEEL-SHEET PILING • LIGHT-WEIGHT PILING
H-BEARING PILE • RAILS
TRACK EQUIPMENT • PIPE & FABRICATION

L.B. FOSTER CO.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

EIGHTY-SECOND YEAR OF PUBLICATION

ENGINEERING NEWS-RECORD

MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600; Washington - REpublic 7-6630

Waldo G. Bowman, Editor

Highways, Airports—Transportation

Eugene E. Halmos, Jr., *Senior Editor*
John R. Owen, Edward M. Young, Jr.

Buildings, Bridges—Structures

Frederick S. Merritt, *Senior Editor*
Edward R. Wood, James B. Sullivan

Rivers, Sanitation—Water Use

Arthur J. Fox, Jr., *Senior Editor*
Howard Jacoby

Finance, Labor—Management

Clyde C. Henning, *Associate Editor*
Charles J. Harding, John Flanagan

Regional Editors

J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Laurens L. Wise, *San Francisco, 68 Post St.*

Copy, Presentation—Production

Stanley C. Jensen
Marcellino V. Leggiero
Barbara Lamb
Harry W. Jensen, *Presentation*
Ruth Solomon, *Makeup*
John C. Greenough, *Printing*

Statistics, Prices, Costs—Business News

Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Loretta Felix, Marion Sciorra, Florence Dembek
James Webber, *Economics*
Ruth I. Carlson, Marie Roessler, Evelyn Huber

Editorial Research and Indexing

Helen Rich
Eva Glerat, Rene Hay
Patricia Witschger, Marianne Stern

Consulting Editors

Van Tuyl Boughton, *New York*
Nathan A. Bowers, *San Francisco*

Washington News Bureau, Room 1189 National Press Building; G. B. Bryant, Jr., *Manager*, Glen Bayless, A. E. Adams, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, V. Craig Richter, Sam Justice, Arthur J. Kraft, D. O. Loomis, Gladys Montgomery, A. L. Moore, Seth Payne, M. A. Reichek, Caroline Robertson, V. B. Smith.

Domestic News Bureaus: Atlanta, 801 Rhodes-Haverty Bldg., Pat Henry; **Cleveland,** 1510 Hanna Bldg., R. E. Cochran; **Detroit,** 856 Penobscot Bldg., Harry Homewood; **Houston,** 1303 Prudential Bldg., J. A. Lee; **San Francisco,** 68 Post Street, M. C. Ralston; **Los Angeles,** 1125 W. Sixth St., John Shinn; **Seattle,** 6040 Fifth Ave., N.E., Ray Bloomberg.

Correspondents: Albany, Albuquerque, Augusta, Me., Austin, Boston, Boulder, Baltimore, Birmingham, Bismarck, Charleston (W. Va.) Charleston (S. C.), Columbus, Cincinnati, Cleveland, Chicago, Cheyenne, Dallas, Denver, Des Moines, Detroit, Durham, Harrisburg, Helena, Houston, Hartford, Indianapolis, Jackson, Miss., Jacksonville, Jefferson City, Kansas City (Mo.), Lansing, Lincoln, Little Rock, Miami, Memphis, Minneapolis, Montgomery, Milwaukee, New Orleans, Norfolk, Omaha, Oklahoma City, Philadelphia, Pittsburg, Portland (Ore.), Providence, Phoenix, Pierre, St. Louis, Schenectady, Springfield (Ill.), Syracuse, St. Paul, Seattle, Salt Lake City, Spokane, Topeka, Trenton, Wilmington. **Canada:** Montreal, Toronto, Ottawa, Victoria, Regina.

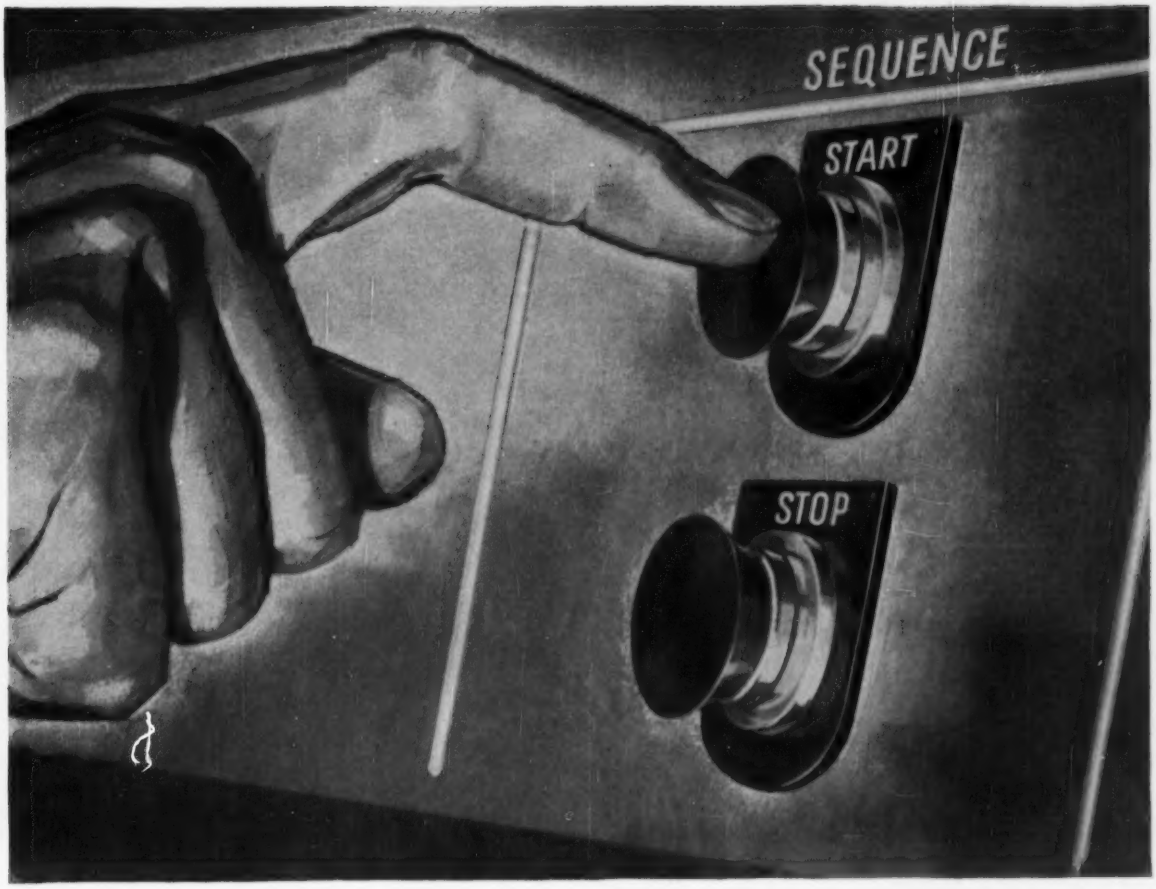
McGraw-Hill Economics Department: Dexter M. Keezer, director; W. H. Chartener

Foreign News Bureaus: Editor, John Wilhelm, **New York;** G. W. Schroeder, **Bonn;** Sharokh Sabavala, **Bombay;** William J. Coughlin, **London;** John H. Kearney, **Mexico City;** John O. Coppock, **Paris;** Dan Kurzman, **Tokyo;** Peter Weaver, **Rio de Janeiro. Correspondents:** Amsterdam, Athens, Bangkok, Bogota, Brussels, Buenos Aires, Caracas, Copenhagen, Geneva, Havana, Helsinki, Johannesburg, Lima, Madrid, Melbourne, Oslo, Rome, Stockholm, Sydney, Tehran and 21 other principal cities and countries.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD Vol. 157, No. 13, September 27, 1956

Published weekly by McGraw-Hill Publishing Company. James H. McGraw (1860-1948), Founder. **Executive, Editorial, Advertising and Subscription Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Publication Office, 99-129 North Broadway, Albany 1, N. Y. Donald C. McGraw, President; Paul Montgomery, Executive Vice-President; Joseph A. Gerardi, Executive Vice-President and Treasurer; Hugh J. Kelly, Executive Vice-President; John J. Cooke, Secretary; Nelson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Circulation Director. **SUBSCRIPTIONS:** Address correspondence to Engineering News-Record—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address. Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. **Position and company connection must be indicated on subscription orders.** Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere and the Philippines, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries $20.00 a year; $30.00 for two years; $40.00 for three years. Second class mail privileges authorized at Albany, New York. Printed in U. S. A. Copyright 1956 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.

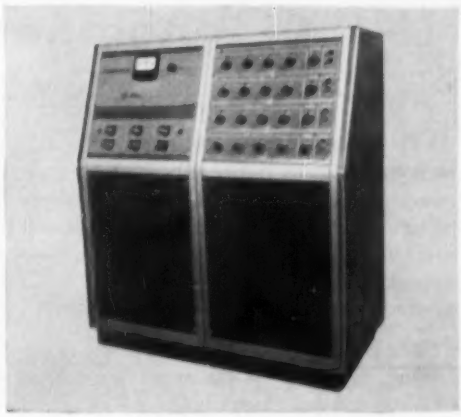


Batch electronically with Batchetron!

Here's what it will do. Operating electronically from a remote control station, the Fairbanks-Morse Batchetron can be preset with knobs and buttons to accurately control your asphalt batching from any one or more bins or tanks. The cycle of mix is also preset, and the actual batching takes place at the touch of a button.

Which of these features will improve your batching operation? Do you want remote control—for instance, batching from an air-conditioned office? Do you want the fast programming feature—for the occasional single batch from a different formula? Do you want the automatic cycling—that will duplicate the batch again and again at the touch of a button?

The Batchetron is . . . Fairbanks-Morse electronics instrumentation plus accurate weighing in the Fairbanks-Morse tradition. There is a new bulletin, No. ED-14, on the Batchetron with many suggested applications which may fit your operations. Send for it today. Fairbanks, Morse & Co., Dept. ENR-9-27, 600 South Michigan Ave., Chicago 5, Illinois.



Batchetron control console.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

SCALES • PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MOWERS • MAGNETOS

NEW ALCOA® ALUMINUM COLORED INDUSTRIAL BUILDING

encloses field house at Haverford

At Haverford College, Haverford, Pa., a huge building enclosed in Alcoa Industrial Building Sheet, in color, is nearing completion. This is the college's new field house, covering nearly an acre and a third. It will be a highly attractive, completely functional structure. Much of its appeal results from an exclusive new Alcoa Aluminum product line . . . Industrial Building Products in color.

This new color is a soft, harmonious green . . . long-lasting, sunfast. It is the result of a joint development of Alcoa and American Chemical Paint Company, called Architectural Alodine*. The color finish is chemically a part of the metal surface. It adds new beauty to the appearance of the metal and improves its natural resistance to weathering and industrial fumes.

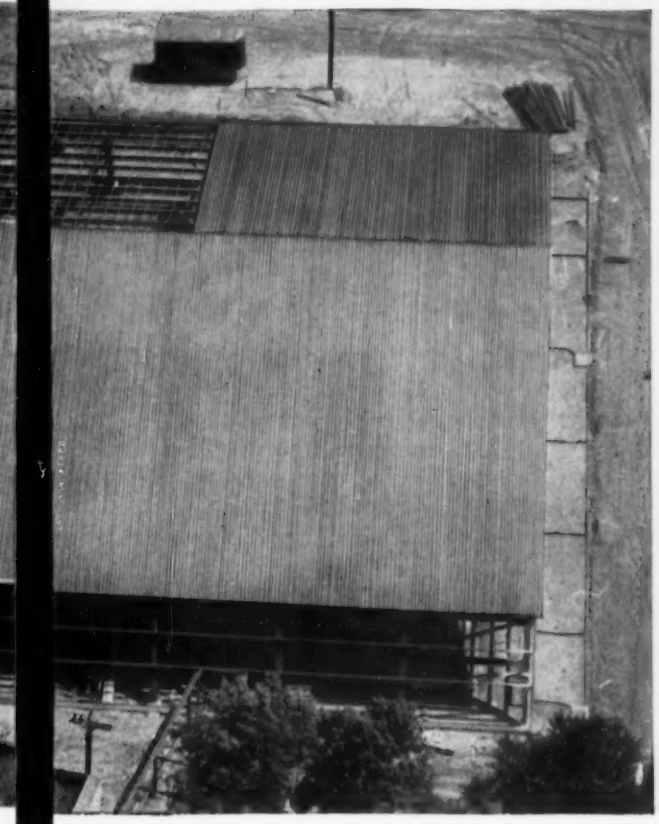
Aluminum was a natural choice for this building. The immense roof area, supported on rigid bent trusses, weighs far less than a conventional roof. Its design provides unobstructed clear areas for 85% of the sports activities of the college.

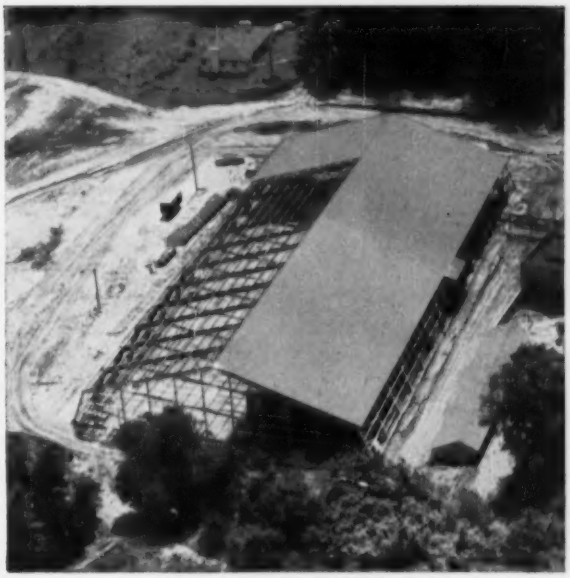
Both the roof area and walls are constructed of Architectural Alodine colored V-Beam sheet fastened to the steel framing. Low cost, handsome appearance and speed of erection as well as light weight governed the selection of Alcoa Aluminum.

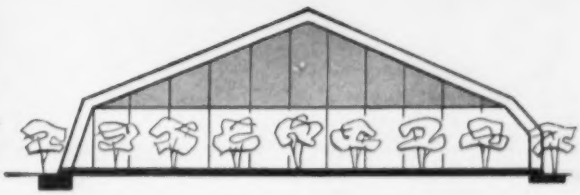
In addition, there will be virtually no exterior maintenance. Foundation and framing costs were lower.

FREE SAMPLE

Your nearby Alcoa sales office has the complete story on Alcoa Industrial Building Products in the new "sea-green" color. They will also be happy to put you in touch with selected Alcoa Approved Applicators who offer a complete service in the supply and erection of these low-cost industrial building materials. If you







ARCHITECT: Carroll, Grisdale & Van Alen, A.I.A., Philadelphia, Pa.

BUILDER: McCloskey & Co., Philadelphia, Pa.

ALUMINUM SUBCONTRACTOR: Elwyn G. Smith Co., Pittsburgh, Pa.

AMERICAN CHEMICAL PAINT COMPANY APPROVED ARCHITECTURAL ALODINE PROCESSOR: J. W. Rex Co., Lansdale, Pa.

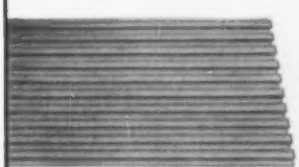
SHEET

College

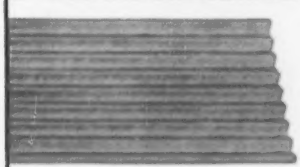
would like a one-foot-square section of Alcoa V-Beam Sheet in the new Architectural Alodine "sea-green" finish, write Aluminum Company of America, 860-J Alcoa Building, Pittsburgh 19, Pennsylvania.

*Registered Trademark of American Chemical Paint Company

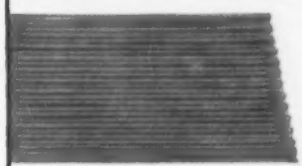
NOW IN COLOR! NOW AVAILABLE



Alcoa Ribbed Sheet



Alcoa V-Beam Sheet



Alcoa Corrugated Sheet

ALCOA ALUMINUM BUILDING SHEET

ALUMINUM COMPANY OF AMERICA

Your Guide to the Best in Aluminum Value

THE ALCOA HOUR

TELEVISION'S FINEST LIVE DRAMA

ALTERNATE SUNDAY EVENINGS

TS-18 "Eucs"

TWIN-POWER SCRAPERS get more work done... *faster*

Twin-Power—two engines driving separate axles—was pioneered by Euclid 10 years ago. Torque converters and semi-automatic transmissions assure easy operation and a smooth flow of power matched to any job condition. The TS-18 is powered by two 218 h.p. engines with a 300 h.p. engine for the tractor available for work where maximum power can be used. Standard tires are 27.00 x 33 with 33.5 x 33 as optional. Harris Construction Company's "Twins" are TS-18 Specials with 518 h.p. and the larger tires.

With a total of 518 h.p.—300 h.p. in the tractor and 218 h.p. in the scraper—Harris' TS-18 Specials really made the dirt fly and completed the Glasgow Air Force Base grading weeks ahead of schedule.

Harris Construction Co. of Aberdeen, S. D. recently set a new record for earthmoving on Montana highway work with a fleet of six TS-18 Euclid Scrapers. In a six-day work week these "Eucs" moved 90,000 cu. yds. on a half million yd. road contract near Nashua on Route 2. They worked 10 hours a day—self loaded gravel, clay and shale without pusher tractors—on hauls averaging 1500 ft. Most of the time each machine worked alone making shallow cuts and fills on sections of the 13-mile job.

At nearby Glasgow Air Force Base, Harris used his original fleet of four TS-18 "Eucs" to move most of the 1,200,000 yds. of gumbo. Working two 10-hour shifts 6 days a week, each scraper averaged 69,000 yds. a month. Performance of the "Twins" on this air base job was so outstanding that 2 more were added to the Euclid fleet—and Harris has disposed of 8 other scrapers and 5 crawler tractors.

With two jobs only 26 miles apart the mobility and independence of the TS-18 Scrapers proved a big advantage. They moved from air base to road job and back again—as conditions required—in about an hour. There was no problem or expense in moving pusher tractors because none were needed at either job. And when a few loads of sand or gravel were needed for culverts or other use, a "Twin" or two took off for the nearest pit and did the job in a hurry.

Owner Ken Harris has found the Twin-Power Scraper the most efficient dirt mover he's ever used. His fleet with job availability of 95% has more than lived up to his expectations in production and low cost yardage. That's why he tells visitors to his jobs, "When I buy additional haulage equipment it'll be TS-18 'Eucs' ".

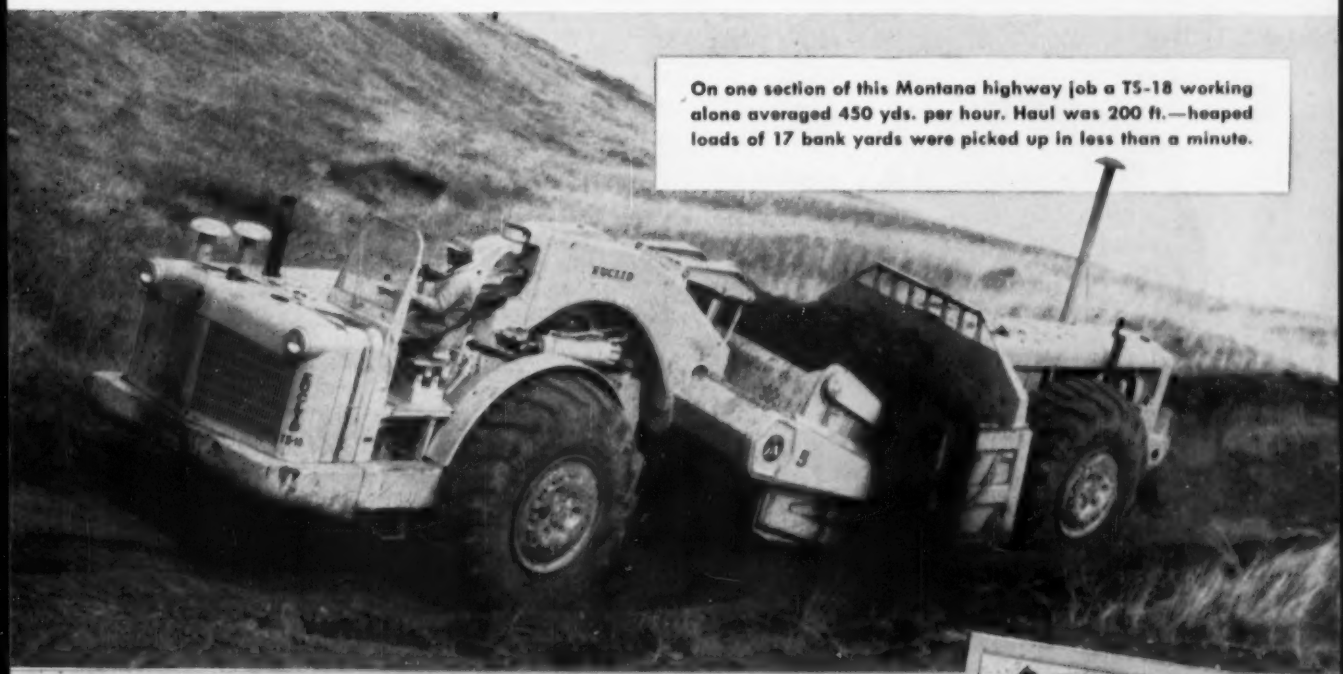
For information on the complete line of Euclid earthmoving equipment, call your Euclid dealer—he can show you why *Euclids are your best investment.*

BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA · See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957 · AMERICAN ROAD BUILDERS ASSOCIATION

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

set new earthmoving records

. . . complete tough jobs way ahead of schedule



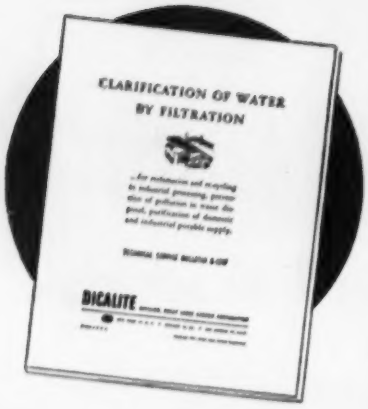
On one section of this Montana highway job a TS-18 working alone averaged 450 yds. per hour. Haul was 200 ft.—heaped loads of 17 bank yards were picked up in less than a minute.

The 33.5 x 33 tires and NoSpin differentials of the TS-18 Specials provided the tremendous traction needed for self-loading the heavy gumbo and gravel and made efficient use of the 518 total h.p. on both of the Montana jobs.

Ken Harris, head of Harris Construction Co. in South Dakota, says "the complete independence of the 'Twin' is revolutionizing road building on many jobs where concentration of equipment in any single cut is not practical." He's standardized on the TS-18 Special for his earthmoving equipment.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



These FREE Bulletins provide much valuable data on WATER FILTRATION

. . . industrial reclamation or recycling, waste disposal, and purification of potable water supply. B-12W is largely industrial; F-552 concerns potable supply. Write to

Dependable
GREAT LAKES
GLC Dicalite
DIATOMACEOUS MATERIALS

Dicalite Division • Great Lakes Carbon Corporation, Dept. E
614 South Flower Street
Los Angeles 17, California

Reader Comment

Paraboloidal Perplexity

SIR—When space permits, would you please have your mathematical advisors differentiate between a hyperbolic paraboloid—mentioned on page 19 of your unusually excellent issue of Sept. 6—and the more familiar hyperboloid and paraboloid.

J. H. KAISER
Syracuse, N. Y.

[EDITOR'S NOTE—One familiar paraboloid is the surface generated by a parabola rotated about its axis. Similarly, an "unparted" hyperboloid is generated by a hyperbola rotated about its imaginary axis. The hyperbolic paraboloid, however, is a saddle-shaped surface containing both parabolas and hyperbolas. Its general equation can be written in the form $x^2/a^2 - y^2/b^2 = cz$, but most likely surfaces used in construction will be of the simplified type, $z = kxy$. Certain families of planes intersect the surface in straight lines, making possible simple formwork. A builder can form the surface with straight members. (Also see ENR's next issue.)]

Fine Compliment

SIR—Your notice of the expiration of subscription to Engineering News-Record has just been received.

Mr. Murray passed on last October. He never would have let his subscription lapse in his lifetime. He had all the copies from 1888 to the time of his death, all in good order. The ones from 1888 to 1935 are nicely bound. They now are for sale.

MRS. RAY MURRAY
1638 *Interlaken Boulevard*
Seattle 2, Washington

Credit for Stone

SIR—The article, "Stone—New Look in Sandwich Panels," in ENR Aug. 16, was of great interest to us. We do, however, regret that nowhere in the article was any mention made of the General State Authority's role as the financing and building agency of the Commonwealth of Pennsylvania, which produced the two state office buildings at Harrisburg. GSA is now launching a similar project in Philadelphia and also is building a state office building in Pittsburgh.

The authority is the "owner" of these buildings, until an amount equal to their cost has been paid to the GSA as rental by the State Department of Property and Supplies. The Commonwealth does not "own" the buildings, as your article stated, until this total building cost has been amortized.

GEORGE A. CRAGO
Public Relations Officer
The General State Authority
Harrisburg, Pa.

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Story Source

SIR—I was highly complimented at finding in my copy of the August 23 issue of Engineering News-Record an article on pages 48 and 51, entitled "Cincinnati's Planning Pays Dividends: City's Road System Grows."

A comparison of the two maps—the one in your article and the one in our CDC Bulletin (Vol XIII, No. 1) that contained the 13th annual report by CDC President Howard J. Morgens—indicates that your article was based upon the bulletin report of our committee's activities during the past year.

I was surprised to find no credit reference.

GEORGE C. HAYWARD
Executive Secretary
Citizens Development Committee
Cincinnati 2, Ohio

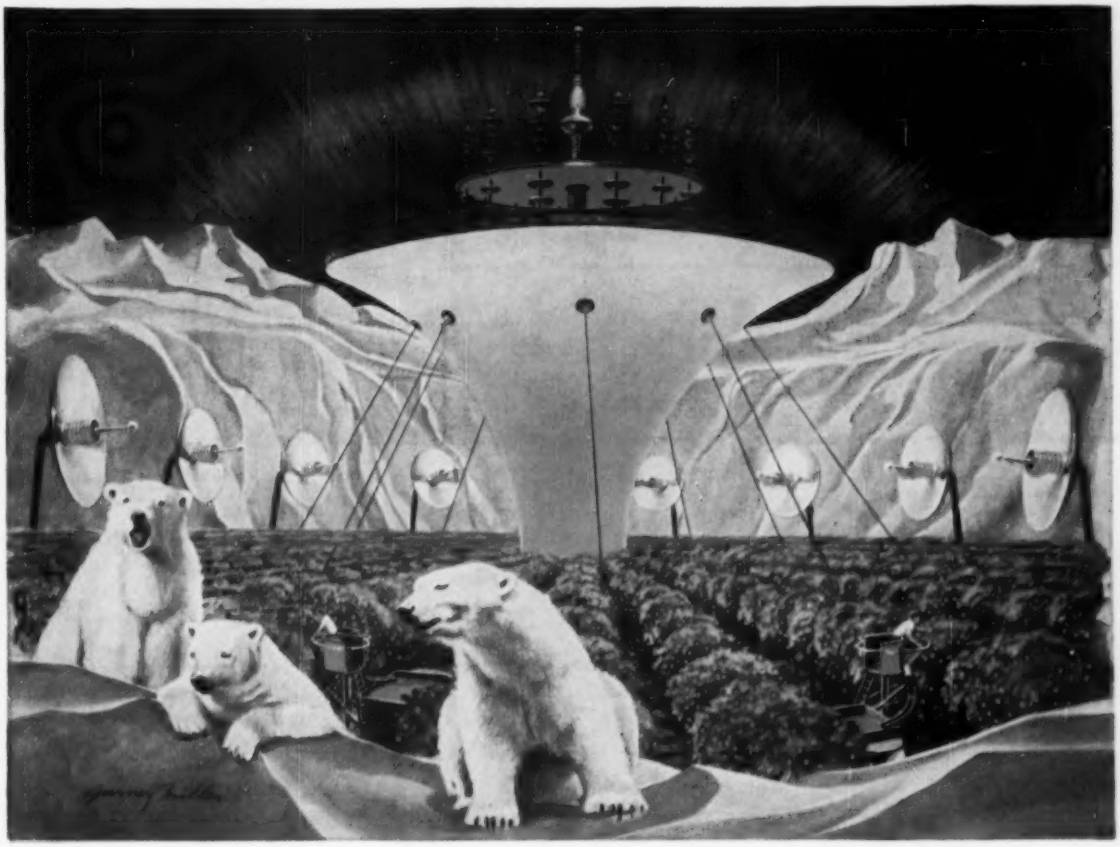
[EDITOR'S NOTE—Though our correspondent used several sources, including newspapers and personal interviews, a portion, at least, of the information presented should be credited to Mr. Hayward's fine organization.]

PG&E's Part in Tri-Dam

SIR—The story of the Tri-Dam project (ENR Aug. 16, p. 40) gives gratifying recognition to the importance of the planning part of a water power project as distinguished from the construction phase.

The value of the federal-owned power sites in upper Stanislaus Basin has long been recognized, and investigations which laid the groundwork for the current construction were acomplished many years ago. To some extent this work was done by federal agencies but the engineers of the Pacific Gas & Electric Co. deserve principal credit.

The irrigation districts came into the



Huge solar engines imprisoning the heat of the sun may create islands of fertility in icy wastelands, thus vastly increasing the productive food areas of the earth.

100 years from now...

WE MAY GROW ORANGES AT THE POLES!

What will the world be like generations from now? Wonderful new products and methods will make living easier, pleasanter, safer. But in this marvelous new era, one old friend will still serve efficiently. Water and gas will be carried by rugged cast iron pipe laid today. For more than seventy American water and gas utilities, cast iron mains over a century old are still serving dependably. And modern cast iron pipe ...centrifugally cast and quality controlled...is far tougher and more durable.

U.S. Pipe is proud to be one of the leaders in a forward-looking industry whose service to the world is measured in centuries.

U.S.
cast iron
PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE
CAST IRON

U. S. PIPE AND FOUNDRY COMPANY, General Office: Birmingham 2, Alabama

A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE.

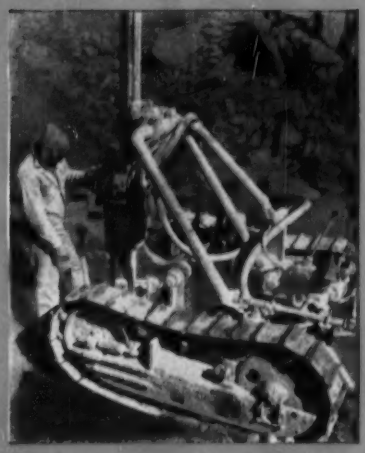
here

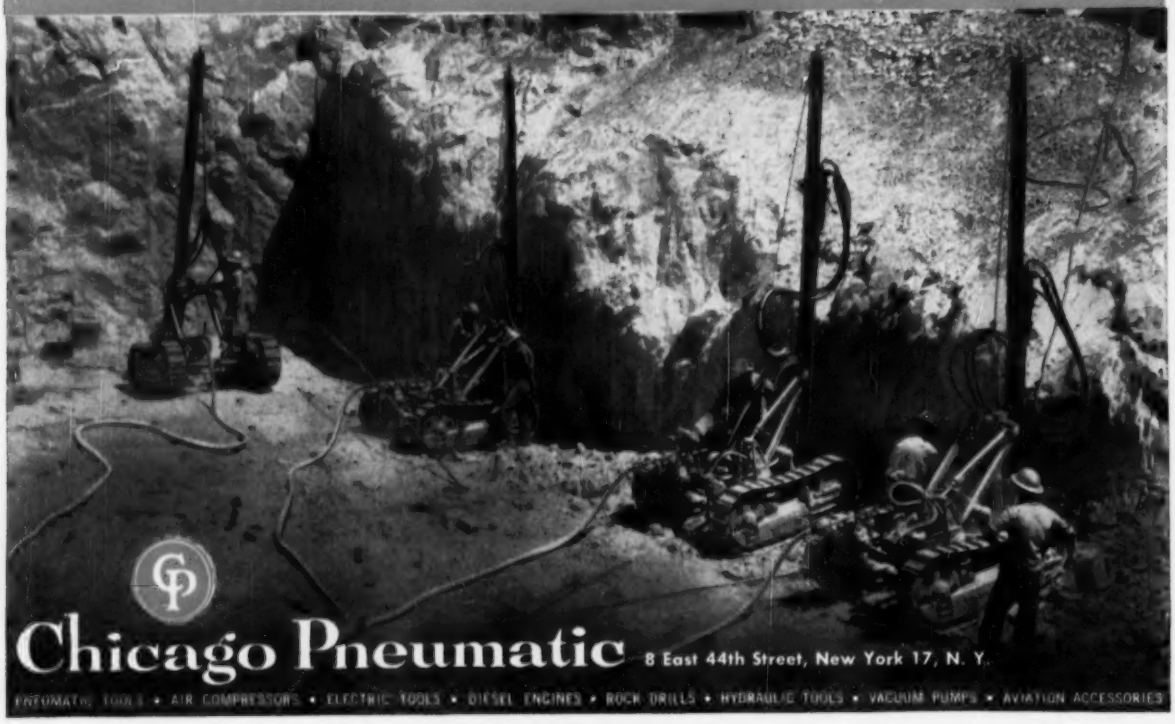
there

everywhere

the G-800 TRACDRIL!

The self-propelled CP Tracdril pivots . . . moves forward or backward and can turn in its own length! "Tracdril" has a hydraulically actuated U-arm for fast drill carriage positioning. Can tow a 13,000 pound compressor up a 10% grade. Its "knee action" crawler tracks take rough terrain in stride. You save time moving from hole-to-hole, get more accurate spotting and gain productive drilling time.





Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

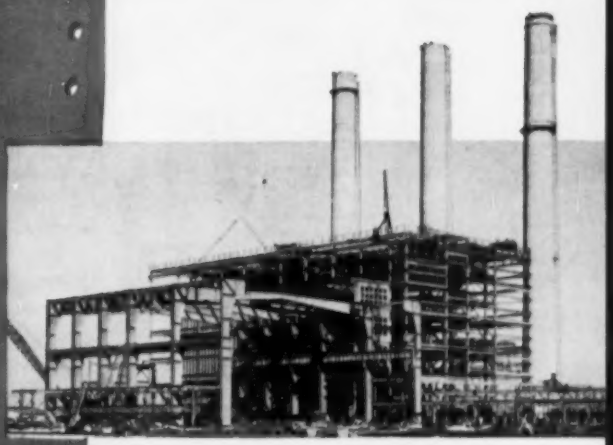
PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

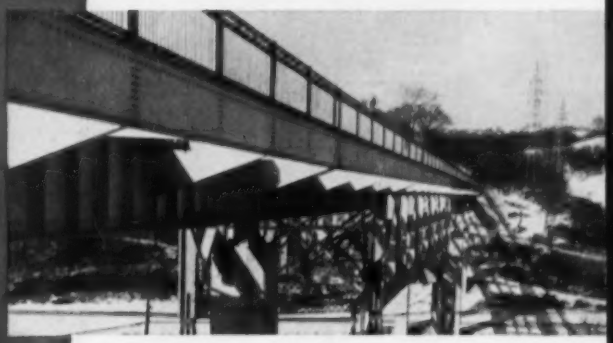
You will profit by using

FORT PITT BRIDGE 60 YEAR KNOW-HOW

on your projects where Structural Steel fabrication and erection are involved • • • • • • •

Steel Permits Streamlining Construction with Safety, Endurance and Economy





Whether your project is a steel bridge, multi-story structure, hospital, school, warehouse or mill building . . . FORT PITT BRIDGE can do an excellent job for you.

Let us bid on your next structural steel job!

There is no substitute for structural steel

Fort Pitt **BRIDGE WORKS**

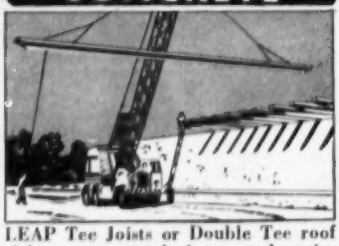
Member American Institute of Steel Construction

General Offices: PITTSBURGH, PA. Plant at CANONSBURG, PA.

District Offices: New York, N. Y. • Cleveland, Ohio • Detroit, Michigan

BUILD
• FASTER!
• BETTER!
• AT LESS COST!
With LEAP®

PRESTRESSED CONCRETE



LEAP Tee Joists or Double Tee roof slabs go up much faster and easier than ordinary construction . . saves time, labor and money!

The advanced design of LEAP franchised concrete products makes for a much better job . . stronger, safer and with clear, post-free spans up to 10 ft.

You can build at much less cost when you specify LEAP franchised concrete products . . . erection time is cut sharply, less material is required, and labor savings are tremendous!

(See our listing in Sweet's Architectural File.)

franchised by

LEAP® Concrete Inc.
Lakeland, Florida

For complete details about LEAP prestressed concrete products, write the franchised yard nearest you or direct to LEAP Concrete, Inc., Lakeland, Fla.

- **A & M Prestress, Inc.** Clear Lake, Iowa
- **Capitol Concrete Co.** Jacksonville, Florida
- **Carolina Concrete Pipe Co., Inc.** Columbia, South Carolina
- **Cleveland Precast Roof & Floor** Cleveland 5, Ohio
- **Concrete Engineering Co., Ltd.** Honolulu 17, T. H.
- **Dickerson Structural Concrete Corp.** Youngwood, Pennsylvania
- **EASTERN PRESTRESSED CONCRETE CORP.** Line Lexington, Pennsylvania
- **Frontier Dolomite Conc. Prods. Corp.** Lockport, New York
- **Leap of Indiana, Inc.** Shelbyville, Indiana
- **Missouri Press-Crete, Inc.** Overland 14, Missouri
- **N. C. Products Corp.** Raleigh, North Carolina
- **Permacrete, Inc.** Daytona Beach, Florida
- **Piedmont Construction Co.** Winston-Salem, North Carolina
- **Prestressed Concrete, Inc.** Lakeland, Florida
- **Pretensados Venezolanos C. A.** Caracas, Venezuela, South America
- **Ruby Lumber Co.** Madisonville, Kentucky
- **Ryan Builders Supplies Ltd.** Windsor, Ontario
- **Ryan Builders Supplies Ltd.** London, Ontario
- **Smith-Kelley Supply Company, Inc.** Mobile, Alabama
- **Southern Prestressed Concrete, Inc.** Pensacola, Florida
- **Stresscrete, Inc.** Leesburg, Florida
- **Superior Sand & Gravel** Phoenix, Arizona
- **T-Stress, Inc.** Houston 2, Texas
- **Turbotville Block Co., Inc.** Turbotville, Pennsylvania
- **West Coast Shell Corp.** Sarasota, Florida
- **Wilson Concrete Company** Council Bluffs, Iowa
- **R. H. Wright & Son** Fort Lauderdale, Florida

. . . Reader Comment

picture in 1947 when negotiations were initiated which led to the partnership agreement with PC&E. Under this arrangement the company assumed all risks in regard to the volume and variation of future output so that the districts might have acceptable credit for the sale of bonds. Obviously, therefore, important obligations were imposed on PG&E engineers regarding the layout and design of the project. During the period from 1947 to 1951, while I had principal responsibility for working out the project for the districts, valuable advice and directions were provided by I. C. Steele, PG&E chief engineer, and his sucessor Walter Dreyer. Throughout the protracted negotiations in regard to dependable output, alternative plans, reservoir sizes, power plant capacities, etc., H. V. Lutge and Dean Worthington, PG&E engineers, made notable technical contributions in the solution of design problems. Also during this period R. E. Hartley and T. P. Stivers, local engineers of the irrigation districts, rendered conscientious service in supervising exploratory drilling at the damsites and field surveys necessary to supplement the detailed surveys made by the PG&E in 1927 under the direction of Grover Green.

F. E. Bonner
Consulting Engineer
San Francisco

CALENDAR

University of Illinois and Portland Cement Assoc., seven lectures on thin-shell concrete structures, Navy Pier, Chicago, Ill., 7 pm to 9 pm. Oct. 2, 9, 16, 23.

Air Moving and Conditioning Association, Inc., annual meeting, the Greenbrier, White Sulphur Springs, W. Va., Oct. 2-4.

Federation of Sewage and Industrial Wastes Associations, annual convention, Hotel Statler, Los Angeles, Calif., Oct. 8-11.

Noise Abatement Symposium, seventh annual meeting, Hotel Sherman, Chicago, Ill., Oct. 11-12.

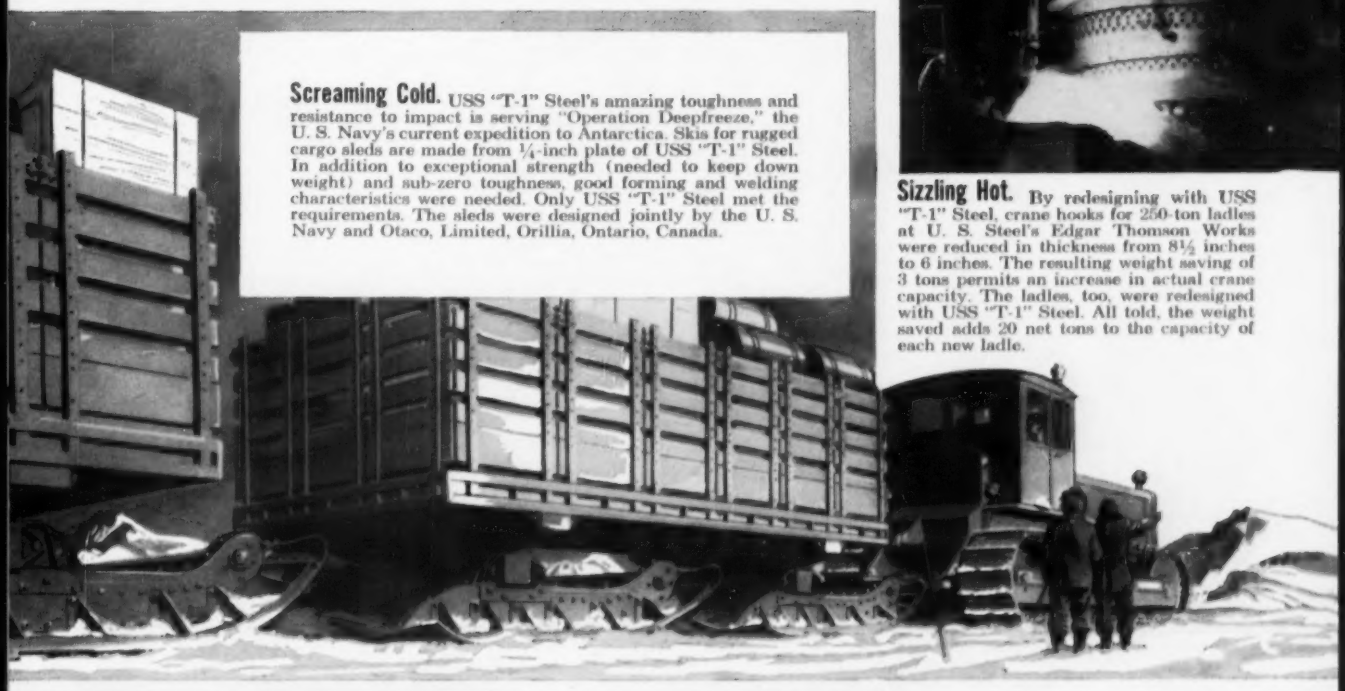
Sixth Annual Drilling Symposium, The University of Minnesota, Minn., October 11, 12, 13, 1956.

Rail Steel Bar Association, fall meeting, Sheraton-Mount Royal Hotel, Montreal, Canada, Oct. 15-16.

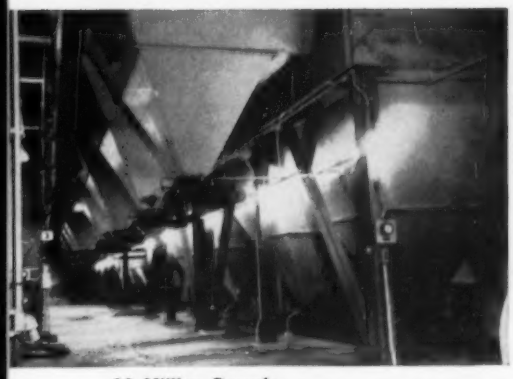
American Society of Civil Engineers, annual convention, Wm. Penn Hotel, Pittsburgh, Pa., Oct. 15-19.

HOW USS "T-1" STEEL IMPROVES THESE PRODUCTS:

Sizzling Hot. By redesigning with USS "T-1" Steel, crane hooks for 250-ton ladles at U. S. Steel's Edgar Thomson Works were reduced in thickness from 8½ inches to 6 inches. The resulting weight saving of 3 tons permits an increase in actual crane capacity. The ladles, too, were redesigned with USS "T-1" Steel. All told, the weight saved adds 20 net tons to the capacity of each new ladle.



Screaming Cold. USS "T-1" Steel's amazing toughness and resistance to impact is serving "Operation Deepfreeze," the U. S. Navy's current expedition to Antarctica. Skis for rugged cargo sleds are made from ¼-inch plate of USS "T-1" Steel. In addition to exceptional strength (needed to keep down weight) and sub-zero toughness, good forming and welding characteristics were needed. Only USS "T-1" Steel met the requirements. The sleds were designed jointly by the U. S. Navy and Otaco, Limited, Orillia, Ontario, Canada.



28 Million Pounds of wet, abrasive coal are handled each day at this steam-electric generating station. And USS "T-1" Steel is being used at points of severe wear in coal chutes and hoppers, pulverizer feed pipes and exhaust pipes, and for liners of ash collectors. USS "T-1" Steel's durability under impact and impact abrasion, its great tensile strength and its good weldability are often essential in rugged coal handling equipment. USS "T-1" Steel can add service life and cut repair and maintenance costs in many types of heavy-duty equipment.

Repair Reduces Downtime. In this coal stripping operation, time costs more than any other item; and *lost* time, caused by breakage and wear of power shovel parts, was costing far too much. So the owner, Putnam & Greene, Inc., Philipsburg, Pennsylvania, started using USS "T-1" Steel for repair work. As a result, size and weight of parts have been reduced, while durability has been improved substantially. What's more, USS "T-1" Steel's good weldability speeds repair work.

How It Can Help You

USS "T-1" Steel, with its high minimum yield strength of 90,000 psi and its minimum tensile strength of 105,000 psi, can help you design or build lighter-weight equipment that will last longer. Its unusual toughness can help you design or build equipment capable of taking heavy impact and abuse at sub-zero temperatures. Its excellent weldability can help you cut the cost of fabricating highly stressed parts, and to reduce repair and maintenance expense. Its good creep rupture strength can help you put more durability in equipment that operates at temperatures as high as 900 degrees F.

Somewhere in your operation, versatile USS "T-1" Steel can help you. Write, wire, or phone United States Steel, Room 5438, Pittsburgh 30, Pa.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS "T1" CONSTRUCTIONAL ALLOY STEEL

USS

UNITED STATES STEEL

for HIGHWAY DEPARTMENTS, CONTRACTORS and ENGINEERS

A desk calculator with automation, this *new* Monro-Matic speeds up road work figuring and eases the load on time-limit estimating. The exclusive ability to compute length x width x depth in one continuous operation—without keyboard resetting—has put this calculator on hundreds of job sites all over the country. Determining curve radii; computing grade line elevations; traverse problems in coordinates, latitudes and departures, cuts and fills—here is double assurance of accuracy on any engineering or construction problem. This versatile machine also saves real time on payroll, cost control, inventories, many other calculating problems.
It is a veritable figure-work bulldozer.
Monroe Calculating Machine Company, Inc.
General offices:
Orange, N. J.
Offices throughout the world. Locate the nearest Man from Monroe in the yellow pages of your telephone directory.

see the MAN from MONROE

for CALCULATING
ADDING ACCOUNTING
DATA PROCESSING
MACHINES

1947 . . . the Barber-Greene Loader photographed when it started cutting costs for Lake Shore Sand & Stone Co. in Milwaukee.

1956 . . . the same loader still going strong after nine years of hard use . . . still saving loading time and costs.

"Our Barber-Greene has loaded a half million tons with no appreciable wear!"

H. F. Runkle, Vice President, Lake Shore Sand & Stone Co., Milwaukee

In his 40 years' experience in the sand and gravel business, Mr. Runkle reports that "nothing can equal a Barber-Greene for stockpile loading."

"We bought our newest B-G Loader back in 1947. Since then it has handled more than 50,000 tons a year with no major repairs and no appreciable signs of wear. We plan to get another 82-A this year to replace our oldest Barber-Greene which has been in continuous service since 1936."

Good design and rugged construction make it difficult to wear out Barber-Greene Loaders. Year after year they provide the cheapest and easiest way to load trucks from stockpile, bank or windrow. Crawler mounted for sure footing, the versatile loader handles bulk materials in one continuous, high-capacity flow. Easy to operate controls let drivers load their own trucks and reduce costly waiting time.

Other Barber-Greenes include the 543 Pneumatic-Tired Loader with swivel conveyor, and the 550 Windrow Loader.

Write for literature on any model in the cost-cutting loader line

56-19-8L

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

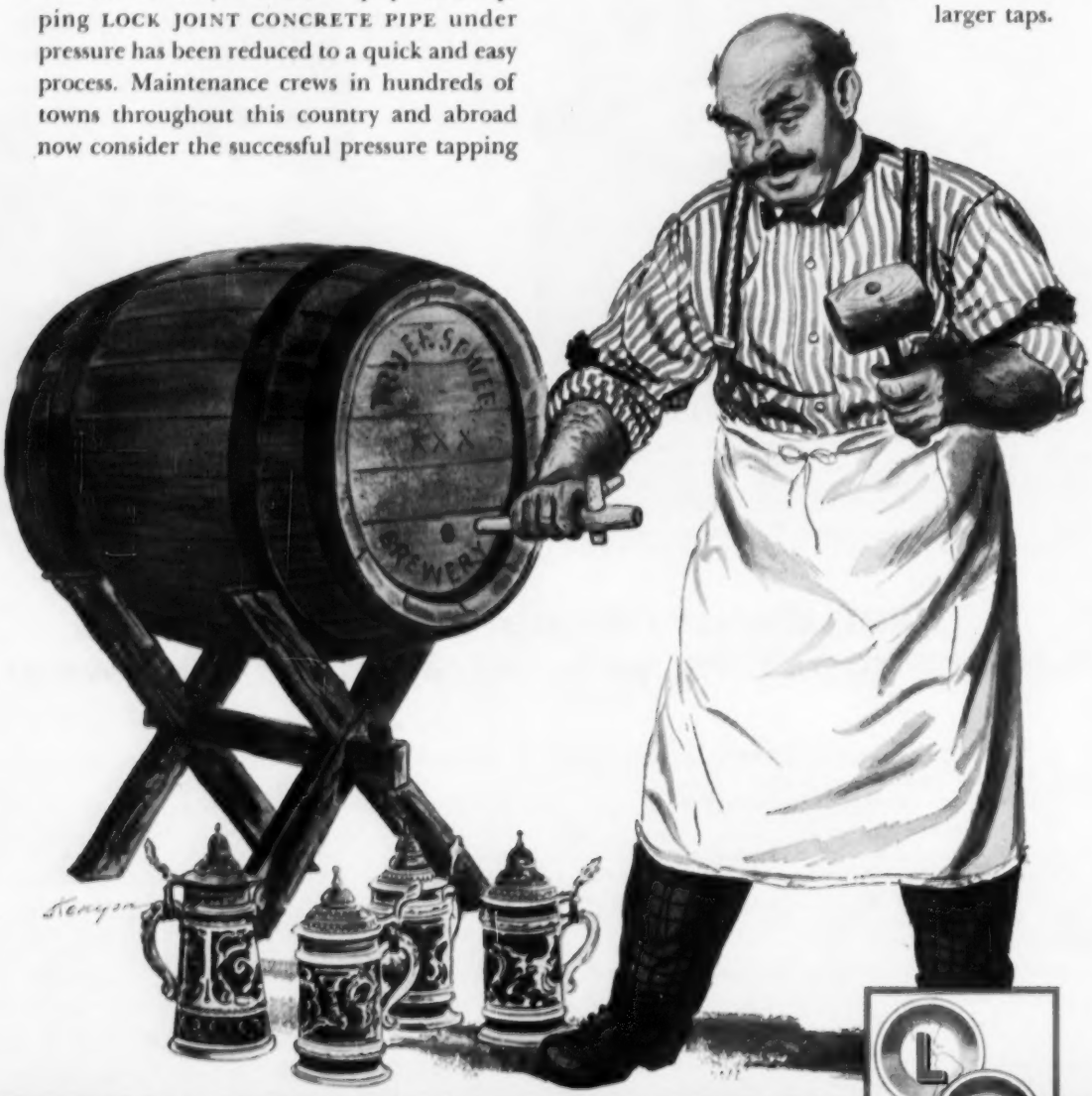
CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

WHEN TAPPING WAS AN ART

Gone are the days when it took an unerring eye and a mighty wallop to tap a keg of beer. Gone, too, are the days when tapping concrete pipe under pressure was a complex, difficult operation.

Thanks to today's modern equipment, tapping LOCK JOINT CONCRETE PIPE under pressure has been reduced to a quick and easy process. Maintenance crews in hundreds of towns throughout this country and abroad now consider the successful pressure tapping of LOCK JOINT CONCRETE PIPE to be a normal part of the daily routine.

Upon request, we would be glad to send you our brochure covering the few simple steps required either for making service connections or for making larger taps.



LOCK JOINT PIPE CO.

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo.

Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

ENGINEERING NEWS-RECORD

Vol. 157, No. 13 September 27, 1956

Number of copies printed this issue: 75,227

CONTENTS

NATIONAL AFFAIRS

The Building Boom Goes to College 21
New York Helps Neighbor Get Water 22
Manpower—One More Problem for Contractors . . 23
Masonry Producers Unveil New Wall Assemblies . . 24
County Officials Also Have Roadbuilding Problems 26
Grand Plan Gets Boost From ARBA 26
Researchers Wanted for Sanitary Engineering . . . 27
Missouri Crossings Get an Addition 27
Funds Sought for Engineering Survey 28
Frame Failure Sparks More Studies 28

FEATURES

44-Mile Water Tunnel Hits Its First Snag 30
Dome Roof Formed on Earth Mound 36
Fine Cranework Places 122-ft Precast Span 41

NEW PRODUCTS

Air Diffuser, Luminaire in Single Fixture 42
Impact-Wrench Calibrator Reads Load Directly . . 42
Telescoping Lift Goes Up to 40 ft 42
Automatic Field Transcriber Gives Permanent Record 42
Slip-on End Covers Cut Stored Pipe Corrosion 44
Vibration Mount Has Twin-screw Leveling 44
Publications 46

INTERNATIONAL

Venezuela's Guarico Dam 51
New Zeal Marks New Zealand Bridges 52

FIELD AND OFFICE

Mud Boils, Accordioned Piles Slow Road Job 54
Camera Extends Life of Wells 56
Quick Check for Coordinates 58

MEN AND JOBS

Lapsley to Head Engineer Maintenance Center . . . 67
Bannerman Retires From U. S. Steel 67
Gregg Leaves Louisville City Agency 67

BUSINESS AND FINANCE

Government Aids Low-Cost Housing 105
Builders Help Themselves 105
Cement Producers Plan Price Increase 106
Bond Market Sales Pick Up 106
Construction Faces More Competition for Steel . . . 108
Equipment Sales May Climb in Coming Year 108
Building Materials Center Planned in New Orleans 108

LABOR

A Look at Longer Contracts 110
Taft-Hartley Used to Stop Work-Assignment Dispute 110
Picketing at Work Sites Still Plagues NLRB 112
ILO Undertakes Training Program in Greece 113

Reader Comment 8
Calendar 12
Washington Observer . 19
Legal 61
Books 69
Unit Prices 72
Materials Prices 75
Construction Reports . . 78
Scoreboard 103
Editorials 128

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

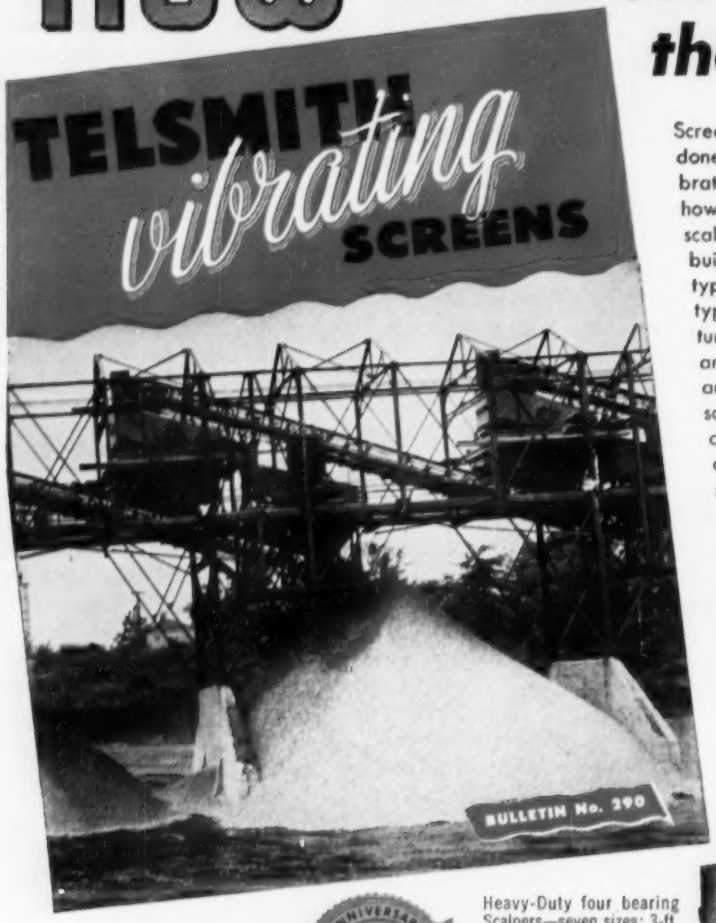
NEW YORK IT WILL BE—All the agitation and promotion to get engineering societies' headquarters moved from New York City has apparently been to no avail. The issue is finally settled. All four Founder Societies who have a piece of the present overcrowded headquarters building—plus the American Institute of Chemical Engineers which maintains separate offices there—have approved a recommendation that expanded facilities be sought without leaving town. Now that this big question has been settled, those concerned can get down to cases on whether the present property can be improved sufficiently to make do, or down to a serious quest for space and money out of which to create a new home for the five societies.

BACK PAT—New York State's Thruway—biggest of the tollroads—got a resounding pat on the back from C. D. Curtiss, Bureau of Public Roads chief, in an address to the American Automobile Association. Curtiss said, "Not a penny is needed to make the Thruway conform to federal requirements." But he coupled the compliment with what amounted to a warning to advocates of federal take-over of all toll-road systems, with the comment that "many millions" would have to be spent on other expressways now in use before they meet interstate standards.

SERVICE CHARGES, BUT NO SERVICE—The Campbell-Kenton County (Kentucky) Sanitation District (ENR Sept. 20, p. 26)—the agency with the sewage treatment plant that has been shut down as an alleged malodorous nuisance—has won a significant victory in court. The district has the right to collect sewage service charges while its disposal plant is not operating. The district can compel cities to cut off water supply to persons who fail to pay sewage bills. And the district has a right to charge a 10% penalty on delinquent bills.

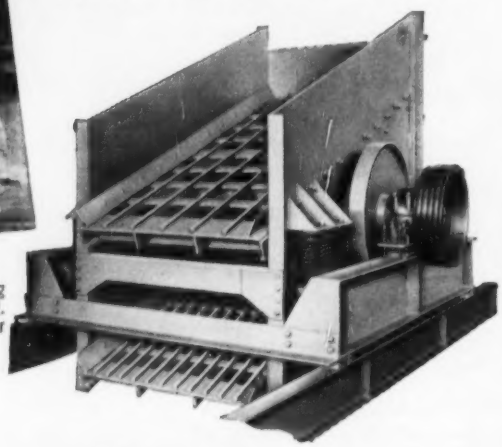
HIGH COST OF MOVING—Connecticut's present embroilment with Hamden and North Haven homeowners is worth watching for a lesson in the high cost of relocation of either roads or homes. The state wants to run a section of its interstate roads through choice residential districts in the two towns. Residents object violently and have suggested five other routes. One of the relocation schemes would involve a tunnel through East Rock—and a cost increase of an estimated $50 million. Moving or buying 100 houses won't come near that figure but even with the state putting up only 10% of the needed money, no taxpayer has objected on cost grounds. Meanwhile—in an effort to save millions of dollars in right-of-way transactions—the Maryland State Roads Commission is investigating a house-moving method used at the St. Lawrence Seaway Project. There, huge trailers relocate dwellings.

HOW TO PICK SCREENS *that pay profits*



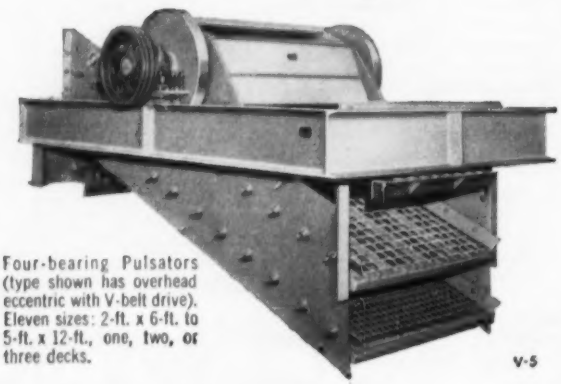
Screening aggregates is a tough job—but it can be done efficiently and at low cost—with Telsmith Vibrating Screens. This new Telsmith bulletin tells you how. It explains which type of screen is best for scalping . . . sizing . . . washing—and why Telsmith builds two types of four bearing screens and one type of two bearing screen. It describes each type; shows several new Telsmith Vibro-King features, including—new counterweight mechanism and new spring suspension, making it the smoothest and most efficient screen you can buy, either for scalping or finishing. Shows new heavy-duty tray construction; best methods for mounting screen cloth. Full of helpful pictures, diagrams and specifications.

Get this NEW BOOK FREE—Ask for No. 290



Heavy-Duty four bearing Scalpers—seven sizes: 3-ft. x 6-ft. to 5-ft. x 14-ft., one or two decks.

Two-bearing Vibro-King Screens—eleven sizes: 3-ft. x 6-ft. to 5-ft. x 16-ft., one, two, or three decks.



Four-bearing Pulsators (type shown has overhead eccentric with V-belt drive). Eleven sizes: 2-ft. x 6-ft. to 5-ft. x 12-ft., one, two, or three decks.

V-5

SMITH ENGINEERING WORKS

500 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • **Cable Address: Songworks, Milwaukee**

WASHINGTON OBSERVER

More than $200 million in lease-purchase buildings was approved by the Administration this week. This is the final step in the lease-purchase procedure, permitting awards for architect-engineer contracts for 28 new government buildings all around the country.

Largest single lease-purchase project so far is in this group. This is the $65-million federal office building to be built in New York City. This makes a total of 98 building projects finally approved through the General Services Administration, at an estimated completion costs of around $700 million.

In this latest package there is business for 20 states ranging from Connecticut to Colorado, from Florida to Minnesota. Twenty of the projects will run over $1 million each; ten of these will cost $6-million or more.

Only a few weeks ago, there was doubt that all would be approved so quickly. As it is, only one project in the group submitted to the Budget Bureau was deferred; this is a proposed $898,000 Post Office.

•

Politics turned the Administration around sharply on aiding homebuilding. Lowering of down payments on low-cost homes and easing of requirements on sales of mortgages to Fannie Mae (see page 105) are a distinct victory for housing chief Albert Cole. It's also a moral victory for the homebuilders.

Cole has been battling for months with other advisers to the President, and the experts around town had judged that the odds were against a turnaround. In general, the across-the-board prosperity plus the big boom in construction (except for housing) supported those who felt that the Administration could stand pat on housing without suffering at the polls in November.

The lower down payments will give GOP politicos a talking point with which to answer Democratic charges.

•

Washington experts are already guessing on the 1957 construction outlook. And what they foresee is generally to the good. While volume should continue to rise, as it has for several years, costs will be going up at the same time, both on materials and labor.

Total construction should show an increase of about 4% over this year, the way the insiders see it now. This is in line with their official prediction of a couple months ago for the year 1956, which they then saw as running 4% over 1955. (Actually, there's some doubt whether this year will show this large an increase; figures for the first eight months show only a 2% increase over the same period last year.)

Cost increases of 4 or 5%, on the average, look certain within the next 12 months. Price increases on steel and other materials are yet to be completely felt, and wage rates are equally bound to climb.

This boomy talk takes into account the tight money situation. Officials privately say—barring some unforeseen emergency—that the complaints will continue, but business actually will keep on growing.

•

Proposals to give a new round of tax amortization to help steel expansion have stalled again—or may have hit a real snag. The Defense Mobilization Board—which has seven of the ten Cabinet members on it—decided not to decide whether fast tax write-offs should be given to get more capacity to produce structural steel and other needed types.

The board bucked the decision to the full Cabinet which is to meet this week. In general, this is taken as an indication of the strength of the opposition inside the Administration. Sec. of Treasury George Humphrey has always sided against any new tax aid; Sec. of Commerce Weeks is also reported now as leaning against, rather than for.

BORDEN MANUFACTURES EVERY TYPE FLOOR GRATING

IN FERROUS AND NON-FERROUS METALS

- **EASY TO INSTALL** – engineered in conveniently sized units for easy installation.
- **EXTRA STRONG** – reinforced, designed with maximum safety factor.
- **LIGHT WEIGHT** – approximately 80% open, reduces dead weight, allows greater live load.
- **SELF-CLEANING** – creates greater safety, economy of maintenance, no sweeping or washing required.

BORDEN METAL PRODUCTS CO.

Gentlemen:

Please send me BORDEN Catalog

NAME .....

TITLE .....

COMPANY NAME .....

ST. AND NO .....

CITY AND STATE .....

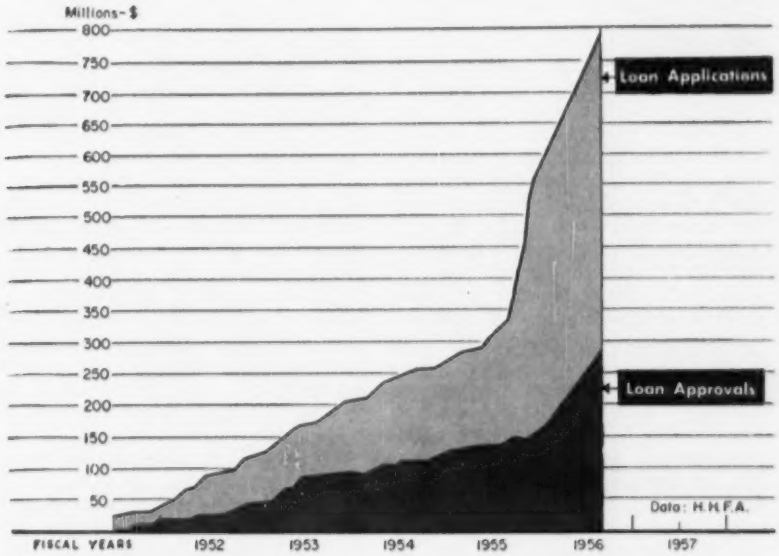
See our Catalog in Sweets

Write for complete information on BORDEN All/Weld, Pressure Locked, and Riveted Floor Gratings in this FREE 8-page catalog

BORDEN METAL PRODUCTS CO.

815 GREEN LANE Elizabeth 2-6410 ELIZABETH, N. J.
SOUTHERN PLANT—LEEDS, ALA. — MAIN PLANT—UNION, N. J.

Loans to construct campus housing have skyrocketed as enrollments keep climbing. And it's only the beginning as . . .



The Building Boom Goes to College

College construction is mushrooming into boom proportions under pressure of fast-growing student enrollments.

With registrations rising at a far faster rate than predicted, college authorities are speeding up project plans for construction of additional facilities that can no longer be deferred.

First effects of the speedup are plainly evident in the flood of loan applications for college housing that pour into Washington. The government program, established in 1950, is experiencing the biggest boom in its history.

More than $450 million of loan requests have been received in the last 15 months, to finance construction of dormitories, family quarters and related facilities. By comparison, only $335 million had been sought during the previous five years.

• The Volume Builds Up

Loan approvals and commitments necessarily lag several months behind applications. But the Community Facilities Administration, which runs the program for the Housing and Home Finance Agency, pushed applications through these stages at a record-breaking pace during the last year.

As a result, the expanding program already has built up a large volume of design and construction business. Right now, private architects are drafting final plans and specifications for 92 projects that are to be built by their college clients with the help of federal loans.

These 92 buildings, costing about $90 million, will be publicly advertised for competitive construction bids, as required by law, within the next few months. Bid invitations for each project will go out as soon as architectural design work is completed. The final design jobs, which ordinarily take three to eight months for structures ranging from $300,000 to $3 million in cost, are in various stages of completion today.

Behind these projects now moving toward construction contract awards, the agency has another big pool of nearly 200 buildings for which preliminary plans have already been approved. Federal funds to finance the $170-million cost of the structures have been reserved by CFA, and loan contracts will be signed as soon as the agency gives final approval.

In addition, CFA is now studying the preliminary plans and loan applications for some 130 projects, valued at more than $125 million, which are advancing rapidly to the next stage of preliminary approval and reservation of funds. This initial group of projects starting through the processing chain is constantly replenished from the inflow of new applications. Requests come in at the rate of 25 to 30 a month, for projects averaging about $1 million each.

College authorities last year got their first tangible warning that the tidal wave of students was rushing upon them much faster than expected. Enrollments went up 250,000 to a record total of 2,750,000. An increase of only 100,000 had been estimated earlier in the year by the U. S. Office of Education.

This fall, student registrations are pushing the total above 3 million. Last year's projections forecast a much slower rise that would not pass the 3-million mark until 1960. There are no estimates yet for the next few years, but informed guesses point to a total of 3.5 to 4 million in 1960 and some 5 million by 1965.

• Fast Service

Loan applications get fast service in the Community Facilities Administration. Commissioner John F. Hazeltine, who heads CFA, and Jay du Von, director of the College Housing Branch, cut red tape to a minimum in the handling of loan requests. Backed to the fullest by Housing Administrator Albert

. . . The building boom on the campus

Cole, these officials limit CFA requirements to the bare essentials necessary for a sound loan on a solid project.

For its original application, a college fills out only two sides of a single sheet and sends it in with the architect's preliminary plans (elevation, floor plan and basic facts on type of structure proposed). The college also submits a copy of its charter, to show that it has legal authority for borrowing money.

After this submission gets preliminary approval, the college has only two more sheets to fill out with additional information for final action by the agency.

An application that meets the essentials can advance to the final stage of signing the loan contract in three months. If legal or financial questions crop up, however, negotiations take longer.

Within weeks after receiving an application, CFA checks the request. And, upon finding it eligible, gives preliminary approval, accompanied by reservation of funds to cover the proposed loan.

Sometimes a request will ask money for more building space than the college can put to use at the scheduled completion date, according to the institution's own figures as evaluated by the agency. In that case, a portion of the request is deferred, and the college is asked to apply only for the top-priority construction. Similarly, requests from colleges that lack legal authority to borrow have to be weeded out, along with any other applications that don't pass the eligibility test.

In the last 15 months, nearly $400 million of loan applications passed the initial screening test and were declared eligible for active consideration. Many of these moved ahead to preliminary approval and to final loan agreement in the same period.

Since midsummer of last year, when the big bulge started, CFA has given preliminary approval to more than $275 million of loan applications and has pushed nearly $150 million through to contract closing. On the books are an additional $300 million now on their way to final acceptance.

This backlog includes about $170 million that have received preliminary okay and are approaching contract agreement, plus $130 million under active study for preliminary approval.

• Help From Congress

Congress gave the government loan program a boost in the housing legislation that it passed last year. Against the wishes of the Administration, the legislators reduced the interest charge by inserting a mandatory formula, tied to the rate for government bonds. This change lowered the interest rate on college loans last year to 2¾%. On July 1 of this year, the rate moved up to 2⅞%.

Lowering the interest rate killed off any chance for private investors to bid on college housing loans. During the two preceding years, the Administration had adjusted loan terms to encourage private lending to colleges through purchase of housing bond issues.

Only when a college failed to get a private bid of 3.5% or less during the first year and 3.6% or less during the second, did HHFA make a loan at a lower rate—first 3.25% and later 3.5%. The policy paid off in a number of private loans. Most of the 88 loans that have shifted from government to private sources made the change during those two years. The total of the 88 projects amounted to $80 million.

Congress further liberalized loan terms last year by increasing the amortization period from 40 years to 50 years. CFA encourages colleges to stick to the 40-year term whenever possible. The 1955 law also broadened the program to include services essential to college housing, such as dining halls and cafeterias, student unions and centers, and health facilities. Up to that time, loans had been limited to construction of housing for students and faculty members.

Building of residence halls, of course, continues to get first emphasis. Some $50 million for supplemental facilities, however, is included in the $275 million of applications that cleared the first approval stage in the last year.

• Architectural Freedom

Surprisingly, CFA imposes no criteria and no fixed standards on the college or the architect in planning a project. Within the limits of the law, the applicant sets the pattern for the loan and the building on which it is based.

Hazeltine sums up the policy this way: "Let the applicant determine what is wanted in a building to fit the school needs. A good architect then can design a handsome structure that is not elaborate."

Standards imposed from above would ruin this approach. But Hazeltine concedes that lack of uniform criteria makes the program harder to administer. Architects, of course, enthusiastically endorse the design freedom permitted, and college authorities like it, too.

Giving full play to architectural expression on individual projects, however, doesn't mean that the lending agency takes no part in the design. Every loan has to be paid back to the government, with interest, in fairly uniform annual amounts as serial bonds fall due. And anything saved in the building reduces the amount that the college has to repay.

With a nationwide proving ground of dormitory construction under constant observation, CFA people can and do recommend many cost-saving ideas to designers. Plans and specifications for every project have to pass inspection in the regional and central offices, and these reviews often lead to modifications that reduce costs without detracting from the appearance of the building.

And after a project goes under construction, engineers from the regional office of HHFA make twice-a-month inspections of the job. Auditors for CFA also keep the project under control. They set up the books at the start and audit them at the finish.

All funds have to be paid in and out of a single account for the projects, eliminating any chance for windfalls. There would be no danger of misuse of funds, anyway, du Von says. College people just don't operate that way.

Friend in Need

Water plan set up to help New York's needy neighbor

New York City last week took steps to avert a threatened water shortage for neighboring Westchester County.

The plan—worked out at a conference between city and county water department engineers—calls for reducing algae in the chain of Croton Reservoirs and allowing some of the better water to flow into the new Croton Aqueduct, which the needy communities have been tapping.

When New York drained lower Croton Reservoir last month to permit repairs on a Cornell Dam spillway, it removed a source of water supply for a number of western Westchester communities. This action, coupled with a period of low rainfall, created possibilities of a water shortage for the city's upstate neighbors.

As a first step to relieve the emergency Arthur C. Ford, New York City Commissioner of Water Supply, Gas & Electricity, directed that copper sulfate be added to water in Muscoot Reservoir and the sluice gates opened. Water from the upper reservoirs of the Croton chain is thus released to the lower reservoirs and from there delivered to Croton Aqueduct.

Water is to be drawn from an old dam three miles east of Cornell Dam, where the water level is higher. Meanwhile, New York City will continue to use Catskill and Delaware Aqueducts until the Croton system is returned to normal.

At AGC meeting in Milwaukee, the spotlight was on . . .

Manpower—One More Problem for Contractors

Manpower—from two viewpoints and with different classifications—is the principal concern of contractors as they assess the impact of the huge new highway building program on the construction industry.

The men who will transform the plans into miles of roads and bridges are concerned to a degree about material shortages. (They believe that steel and cement will be in short supply for the next 10 years). They think that competition will be keen and healthy—but that prices will go up a bit. And they are not at all worried about their own ability to meet the challenge of a $33-billion program.

Their main concern is engineering manpower and labor relations.

That stands out from three days of meetings at Milwaukee last week as the Advisory and Governing Boards of the Associated General Contractors wound up their annual deliberations. More than 400 leaders of the 6,600-member organization spent the three days talking AGC business in part—but exchanging views on their own business as well.

General prospects for business were good. The contractors were talking in terms of a total of $78 billion worth by 1965, (including maintenance and repair) up from what they estimate as the current yearly rate of $60 billion.

• Engineering Manpower

Although it is the highway program that lends greatest urgency to the problem of engineering manpower, the contractors also were concerned with the engineer shortage as it affects all phases of their business.

In formal sessions, their discussion was led off with an address by W. A. Bugge, Washington's Director of Highways, who urged the need for on-the-job training programs, "realistic" salaries and administrative changes that are planned to relieve trained engineers of details.

And on an equally serious plane, the group heard two committee reports on education—both aimed at the long-range problem of providing proper training for engineers and finding enough students to fill the needs of the construction industry.

The AGC education committee endorsed both in principle and as a long-range objective the course of study recommeded by W. A. Klinger, committee co-chairman, who has been a spark plug in a joint AGC-American Society for Engineering Education Committee on Education.

The Klinger (and the committee) recommendations call for:

- A five-year college curriculum that will result in the award of a B.S. degree in civil engineering after the fourth year but will include a broader base of subjects aimed at training the student for construction administration problems.
- Award of a degree of Master of Construction Engineering after the fifth year.

As immediate objectives, the committee's resolution urged:

1. Cooperation with all other interested groups to improve secondary-school curricula—particularly mathematics and science—to give a better foundation for later engineering studies.
2. Wider acceptance by colleges and universities of four-year courses in civil engineering with construction options.
3. Contractors and others connected with the construction industry to make summer employment available for student engineers and faculty members.
4. Inclusion of construction subjects in university extension and night-school courses.
5. AGC chapters to establish scholarships for students willing to take a fifth year of construction courses.
6. That "raiding" of faculties of engineering schools by elements of the construction industry must be discouraged.

The contractors obviously were well aware that what they proposed is a long-range program requiring added financing, special training, personnel and facilities not now available.

• Labor Relations

Concerning the question of labor, the worry wasn't focused on availability but rather on the requirement in the highway bill that will impose prevailing wage regulations on many highway jobs.

It was clear from discussions and an approved resolution that the group was perturbed about two principal matters. The first is the possibility that imposition of rates from Washington will upset local labor conditions. The second is that labor will increase its recent trend toward attempting to ignore or bypass the National Joint Board for Settlement of Jurisdictional Disputes.

On prevailing wages, the AGC group urged that the U.S. Department of Labor:

- Extend the life of any prevailing-wage decision from the present 90 days to at least six months.
- Work directly with state highway departments on setting wages, instead of working indirectly through its own regional offices.
- Be careful to avoid the use of building rates for highway jobs—but give careful consideration to conditions that affect highway construction.

On the questoin of the Joint Board, the contractors reflected a growing worry in their own ranks as to the future of the board. Their resolutions took the form of official "advice" to the AFL's Building and Construction Trades Department and declared that:

- AGC will rely on labor's pledge that there will be no stoppage of work arising out of any jurisdictional dispute.
- The "continuing trend of indifference" on the part of labor to the established procedures of the Joint Board has "adverse effect on the prestige of the . . . board, and on the industry as a whole."
- AGC "insists" that the Building and Construction Trades Department and its affiliates exert every effort to bring about better cooperation and compliance.

Reinforcing this strong stand the labor committee also approved a resolution recommending that AGC support the U.S. Chamber of Commerce in its fight against secondary boycotts.

On equipment, said a joint AGC-Construction Industry Manufacturers Association committee, there will be no shortages of equipment used solely for highway purposes. The group cited good equipment inventories now in the hands of contractors; expansion of manufacturers' capacities; the possibility of curtailing foreign shipments, if U.S. demand warrants such a move.

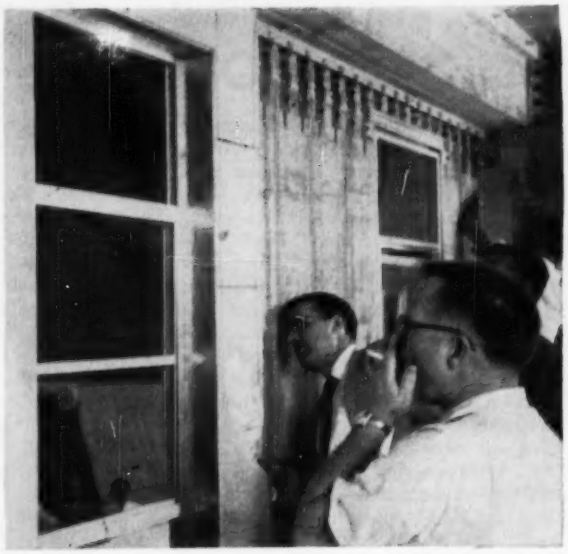
• And Competition Too

As always, the contractors were concerned about competition and prices. Surveying its own members, AGC reported that slightly more than half saw competition remaining about as at present—a sign, said AGC, that competition is so keen now that it can hardly become keener. But half the contractors polled expected to see bid prices go up over the next six months—though 39% saw no change, and 12% even thought there might be a decline.

• **Nominations of officers**—As a final order of business, the board nominated Lester C. Rogers, Bates & Rogers Construction Corp., Chicago, Illinois for 1957 president, and Fred W. Heldenfels, Jr., of Heldenfels Brothers, Corpus Christi, Texas, for vice president.

Balloting will be by mail and the new officers will be installed early in 1957.

BRI conference on masonry yields valuable information on wall costs and maintenance and previews new developments, as . . .



Masonry Producers Unveil New Wal

Masonry producers are preparing to meet the competition from metal and concrete-panel fabricators with thin-wall assemblies of their own. This is evident from research reports presented at the Modern Masonry Conference conducted by the Building Research Institute in Washington, D. C. last week.

The conference was sponsored by the Allied Masonry Council and drew an attendance of about 320.

In addition to previewing new products, the conferees also considered means of avoiding wall failures, delved into costs and examined design and construction techniques.

• **Brick and tile research**—Robert B. Taylor, director, Structural Clay Products Research Foundation, Geneva, Ill., disclosed that his organization now has an operating budget of about $500,000. Results made possible by the research program include improved wall assemblies and more efficient site techniques.

Since the SCPRF introduced the SCR insulated cavity wall and SCR brick, a 6-in.-thick unit (1952), the foundation has made studies leading to development of scaffolds that can improve productivity 20% to 25%.

New wall products include a ¾-in.-thick clay slab with a "Norman brick" face size called SCR Re-Nu-Veneer a 2¼-in.-thick brick panel with steel-reinforced cement grout backing; a structural ceramic glazed clay tile unit 4 in. thick, which has a 60% sound absorption and a sound transmission loss of 47 DB unplastered; an unusually lightweight clay brick; and mortars with bond strengths exceeding 200 psi, instead of the usual 50 psi.

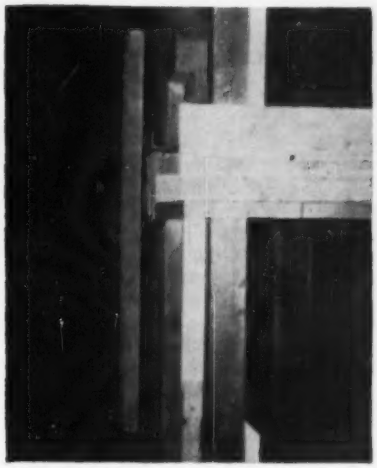
• **Stone developments**—J. T. McKnight, executive director, Indiana Limestone Institute, Bedford, Ind., said that research by his group has made available a through-wall sandwich unit. It consists of a 3-in. stone facing, 2 in. of rigid insulation and 3 in. of natural stone aggregate with a resin emulsion binder. For ease of handling, it will be 5 in. high by 24 in. long.

Another new assembly is a large panel (8x3 ft) composed of a 2-in. stone facing and 2 in. of wood-fiber concrete.

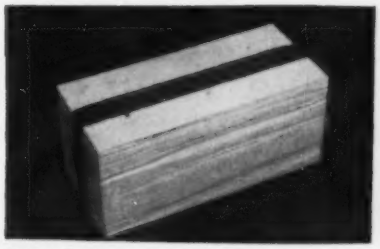
A. T. Howe, vice-president, Vermont Marble Co., Middlebury, Vt., called attention to marble entries in the thin-wall field. Included are an elementary school in West Columbia, Texas, with walls above and below windows consisting only of ⅜-in. thick marble; and the Gulf Oil Building, Atlanta, which has an exterior facing of ⅞-in. marble, backed up with ½ in. of parging, an air

Where the Building Dollar Goes

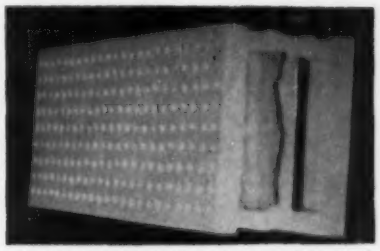
Item	Percent of Total Cost
Excavation and Foundations	4.53
Steel Frame and Fireproofing	16.92
Brick and Stone Masonry Windows and Glazing	8.72
Roofing and Flashing	0.45
Waterproofing	0.36
Interior Partitions	8.29
Metal Lath and Plaster	2.32
Carpentry and Millwork	1.26
Miscellaneous and Ornamental Metal	2.85
Cement Finish Floors	1.48
Tile, Terrazzo and Marble	2.35
Floor Coverings	0.52
Painting and Decorating	0.69
Acoustical Treatment	2.45
Finished Hardware	0.27
Security Vaults	0.60
Heating, Ventilating and Air Conditioning	19.55
Plumbing	5.59
Wiring and Fixtures	10.28
Elevators and Conveyors	9.12
Job Supervision and General Expense	1.40
	100.00



BRICK PANEL 2½ in .thick (above), with a cement-grout backing (left), has been developed for curtain walls.



NEW SANDWICH PANEL, 8-in. thick, consists of limestone, rigid insulation and aggregate with resin binder.



CLAY TILE 4 in. thick, developed for both acoustic and structural purposes, has a perforated face and glass-fiber insert.

Assemblies

space, 3 in. of rigid insulation and ¾ in. of plaster, for a total thickness of 5¼ in. Cutting equipment now available makes even thinner facings possible.

• **Ceramic veneer progress**—Albert E. Barnes, manager, architectural products promotion, Gladding, McBean & Co., reported development of a prefabricated ceramic veneer (architectural terra cotta) unit, called CV Panelwall. One type—now being installed on the exterior of the Methodist Hospital, Arcadia, Calif. —is 3 to 5 in. thick and ranges in size up to about 30 sq ft. It consists of a 1-in. ceramic-veneer facing and 2 in. or more of lightweight reinforced concrete. A much thinner panel (1¾ in. thick) is under development.

• **Comparative costs**—An estimate of how masonry exterior walls stack up costwise against other materials was given the conference by H. T. Noyes, vice president, Turner Construction Co., New York City. He pointed out that while wall costs have risen in step with other items, their proportion of the total building cost generally has gone down. For a 20-story office building constructed in 1927, brick and stone walls, window and glass came to 19.8% of the total cost, whereas similar walls for a 25-story office building erected in 1949 represented only 8.29% of the total cost. (Electrical and mechanical costs changed from 27.52% in the 1927 building to 44.54% in the more recent one.) A breakdown of office-building costs for the New York City area is given in an accompanying table.

A comparison of wall costs is presented in another table. These are costs-in-place as experienced in various buildings, corrected to July 1956.

• **How to cut maintenance**—Alf M. Myhre, architectural and civil specifications engineer, Design Division, Engineering Department, E. I. duPont de Nemours & Co., Wilmington, Del., offered the following suggestions for avoiding wall troubles:

• Recognize that walls undergo dimensional changes and that restraint cannot stop the movement. Provide wall stability by using flexible ties to columns, beams and spandrels.

• Except when absolutely necessary, do not surround steel or concrete columns, beams or spandrels with masonry. Especially, do not place masonry in contact with columns. Prevent physical contact between edges of decks or floor slabs and the inside face of masonry walls.

• When spandrels are necessary for support of masonry in multi-story buildings, make them stiff—even to the point of preventing deflection of more than 1/500 the span—and provide slotted connections at one end to prevent cumulative expansion.

• Provide expansion joints where necessary. DuPont has found that the provision of one expansion joint in each 140 ft of straight wall is quite satisfactory when walls are faced with burned brick units.

• Eliminate parapet walls.

• Use calking compounds that remain truly elastic and provide lasting adhesion to both masonry and metal surfaces.

• Keep the walls dry as they are constructed and waterproof them as soon as possible.

Charles A. Peters, director, Buildings Management Division, U. S. Public Buildings Service, Washington, D. C., said that with stonework, poor workmanship, unsatisfactory bonding materials and lack of protection of the work during construction are the principal sources of trouble.

Peters reported that the tendency to use high-strength mortar usually results in poor bond with masonry units. Shrinkage quite often destroys the bond.

With brickwork, he believes, the chief trouble is the difficulty of getting sufficient mortar in vertical joints.

What Owners Had to Pay for Walls

Type of Building	Location	Description	Cost—$ per sq. ft.
32-story office	New York City	Face Brick and Aluminum Sash	5.20
3-4 story lab.	New York State	Roman Brick and Aluminum Sash	5.47
5-story hospital	New York City	Brick Cavity Wall	4.60
25-story office	New York City	Limestone—Alum. sash and spandrel	7.40
25-story office	New York City	Limestone includ. spandrel—Steel windows	6.15
6-story Telephone	Near New York City	Blast Resistant limestone and conc.	8.90
2-story lab.	New York State	Alum. Porcelain Enamel and glass	6.30
41-story office	Pennsylvania	Limestone with stainless steel windows and Steel spandrels	12.30
42-story office	New York City	Stainless Steel with reversible sash	7.20
3-story office	New England	Alum. Stainless Steel Trim and ⅜-inch Solex Glass	11.75
2-story office	Near Philadelphia	Porcelain Enamel Stainless Steel and Glass	$11.60/sf.
1-story manfg.	Virginia	Concrete tilt-up and corrugated asbestos	1.22

When it comes to faster roadbuilding . . .

County Officials Have Their Problems, Too

With attention focused these days on the "Grand Plan" for implementing and expediting a multi-billion-dollar interstate highway system, county officials are apprehensive as to how their own roadbuilding will be affected.

Last week at Mackinac Island, Mich., some 500 county engineers and officials took a searching look at this and other knotty problems. The three-day conference, sponsored by the American Road Builders Association's County and Local Roads Division, was the fourth such annual meeting.

"Stretching the county highway tax dollar with engineering management" was the conference theme. And, according to both formal statements from the convention rostrum and informal coffee-break comments, this complex problem is uppermost in the minds of many county officials today. One obvious answer is to increase productivity of engineers by taking advantage of the latest advancements in labor-saving methods of design and field engineering.

• **Local outlook**—The average county engineer isn't awed by the size of the interstate highway program. Nor does he feel especially slighted or overlooked in the over-all federal-aid highway program—both state and federal speakers on the program assured him he wouldn't be. But just the same, the increased tempo of interstate highway planning and construction is posing some perplexing problems to the county engineer.

For one thing, construction of a modern four-lane divided interstate highway requires the securing of a lot of right-of-way, which frequently meets with vigorous local objections. Moreover, the building of such a controlled-access highway requires the closing off of numerous county and local roads, or diverting local travel along service roads to an overpass or underpass or a point of access. This often doesn't set too well with local interests with whom the county engineer must deal.

Another point of concern to the county engineer in the small-to-medium size category is that with major emphasis on a greatly expanded interstate highway program, popular support for county and local roads could diminish to an alarming level. On the other hand, the larger and richer counties report increasing demand for higher type local and county roads.

In many areas, the influence of higher standards of design incorporated in both tollroads and interstate routes is being reflected in what the motorist wants in the way of local roads. This unquestionably will result in more and better feeder roads as the interstate system is expanded.

• **How about materials?**—At the same time there seems to be considerable apprehension in some county engineer circles that roadbuilding materials may become a serious bottleneck in their programs. Not that their own requirements will be so great as to exhaust supplies, but that the multi-million-dollar interstate highway projects will deplete them. Thus, some of the counties might have difficulty filling their needs for cement, steel, gravel, sand and other basic roadbuilding materials.

Said J. N. Robertson, President of ARBA and Director of Highways, District of Columbia: "There will be a tremendous demand for roadbuilding equipment, materials and manpower, that must affect the counties."

Robertson pointed out that within the next five years the demand for roadbuilding equipment will increase 200%. Between now and 1970 a total of 26 million tons of structural steel will be needed for the entire federal-aid highway, also 17 million tons of reinforcing steel and 49 million tons of other miscellaneous steel, including corrugated metal pipe. During this same period the roadbuilders will be looking for 1.5 billion barrels of portland cement and 130 million tons of bituminous material and 19 billion tons of aggregates.

Probably five years from now this accelerated roadbuilding program will provide employment for 1,500,000 persons, of which at least 500,000 will be working directly on the construction jobs.

This program will be an incentive to the inventive genius of the equipment manufacturer, declared Robertson. All kinds of new and unusual and economically operated equipment and machinery will be developed. And the demand for such items as new traffic signs may reach 1 million in a single year, or perhaps 5 million gallons of paint. These are only a few examples of the tremendous impact on business and industry of this vitally needed roadbuilding program that is now going ahead, Robertson said.

• **Counties remembered**—Similar views were expressed by ARBA's Executive Vice-President, Maj. Gen. Louis W. Prentiss (U.S.A. Ret). He assured his listeners that county organizations are the backbone of the national highway program, without the glory and glamor of tollroads and suspension bridges. "ARBA will continue," he said, "to advocate and work for higher pay for county and state highway departments."

ARBA's objective in the highway program is to find out what needs to

Grand Plan Gets Boost From ARBA

County engineers and officials heard a major piece of good news at last week's conference. They were told that ARBA directors have approved sponsorship of a program to help expedite roadbuilding—and that ARBA Executive Vice-President Prentiss has been authorized to carry it out.

This is what ARBA plans to do under its new program:

• Prepare a series of 26 full page institutional type ads for the magazine, "Editor and Publisher," to tell ARBA's story to U. S. newspaper editors, and to seek, through them, the instigation of local campaigns to eliminate bottlenecks in the national highway program.

• Prepare a 28-minute color sound film of the highway industry, showing: (1) the need for the roadbuilding program; (2) how modern highways are engineered; (3) how they are built; (4) safety and convenience features, and (5) their economic impact. This film will be released to the general public through state highway departments to arouse interest in the program and educate the public to the need for adequate highways. It also will be released to high-schools and colleges to attract boys to engineering as a profession.

• Formulate plans for creation of an ARBA Highway Engineering Educational Foundation to support the association's plan for stimulating interest in the future of highway engineering as a profession.

• Get out a new "Roadbuilders News" on a format that will cover all segments of the industry and better serve the industry.

• Publish a weekly Washington Newsletter covering matters of interest to the highway industry, federal departments and Congress.

• Initiate an immediate new membership campaign to broaden the base of support and participation, and help pay for the many things that must be done to get the program rolling.

be done now to insure its implementation and expediting. "We must make a continuing analysis of the situation and work on trouble spots before they develop," Prentiss said.

"Yesterday's needs were money and authority," declared Prentiss. "That we have. Today's needs are to get the roadbuilding program going by eliminating the bottlenecks involving such functions as adequate engineering, right-of-way acquisition and better public understanding. Tomorrow's needs will be added capacity of contractors, manufacturers of equipment and material suppliers."

Researchers Wanted

New England Water Works Assn. hears plight of federal research: Money but no men

A scarcity of brainpower is the chief obstacle in the path of research progress in the field of sanitary engineering, according to Harry A. Faber, Research Coordinator for the U. S. Public Health Service.

Speaking at the New England Water Works Association meeting last week in Bretton Woods, N. H., Faber stated that money was available—more this year than last—but the men to perform the projects were not to be found.

Discussion of Faber's remarks brought out the point that part of this money offered as high salaries might unearth some of the needed scientists; and Thomas R. Camp of Camp, Dresser & McKee, Boston, made the serious suggestion that increased size of individual grants might remedy current apathy among research agencies toward tackling the offered projects. Grants now average about $10,000 per project per year; Camp suggested increased project scope and size to the neighborhood of $50,000 per year.

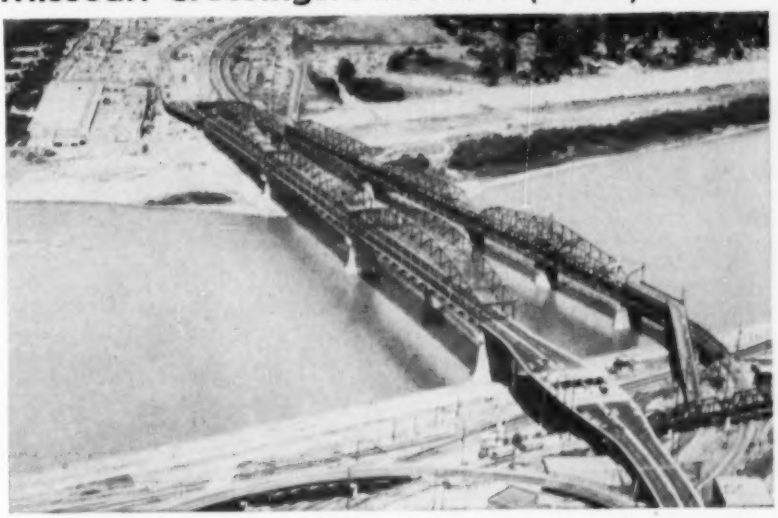
Among the projects needing more intensive research, Faber listed: brine conversion, process water reuse, induced precipitation and radioactive wastes. He pointed out that during the current fiscal year $571,000 will be available through PHS for research grants; an increase from the $466,000 allotted the previous year. And perhaps double the current amount may be budgeted in the next fiscal year under the new water pollution control law, ventured Faber.

PHS has 41 research projects going currently. Typical examples cited are the investigation into toxicity of chromium at Michigan, and the attempt at nutrient recovery through algae production in sewage ponds at the University of California. Faber emphasized the need for more research into processes which he called accidental discoveries.

Charging the sanitary engineering profession with failure to attract enough intelligent high school students to its ranks, Faber brought out the information that in the last two years there were almost as many masters degrees in the sanitary field as there were bachelors degrees.

With this meeting in Bretton Woods, NEWWA headed into its 75th year. Edward L. Tracy, chief of Vermont's Bureau of Environmental Sanitation, took over the presidency of the association from Allan F. McAlary, of the Rockland (Maine) Water Company.

Missouri Crossings: Ancestor (1869) . . .



. . . First Generation and New Addition

On July 3, 1869, engineer and pioneer airman Octave Chanute proudly walked across the wood truss bridge with its right bank swing-span at Kansas City, Mo., to the plaudits of a crowd that welcomed the first permanent crossing over the wild "Big Muddy."

Chanute built well. His structure stood until 1917, when it was replaced (on the same site) by the steel bridge at right in the lower photo. The new crossing carried railroad tracks on a lower level and a two-lane roadway on the upper.

But with construction of Kansas City's Municipal Airport just across the river from the city, and residential and business development on the east bank, the bridge became a bottleneck for road traffic. Construction of a new toll span started two years ago.

The new Broadway Bridge and its approaches comprise a 3.7-mi project, cost about $13 million, and is owned by the city of Kansas City. The quarter-mile main structure carries two 22-ft roadways and a 4-ft median, and includes—with approaches—about 7,500 tons of structural steel. Foundations are supported by tubular steel pies filled with concrete.

What Are the Facts?

Funds sought for survey of engineering profession

A proposal for a survey of the engineering profession is out for endorsement.

The proposal—prepared by an 11-man joint committee of Engineers' Council for Professional Development and Engineers Joint Council, and headed by M. D. Hooven—is the start of fulfillment of a mandate given to Thorndike Saville, president of ECPD, to sponsor such a survey (ENR Mar. 22, p. 67).

Constituent societies of both bodies are being asked to approve establishment of a Joint ECPD-EJC Committee on a Survey of the Engineering Profession; to provide an immediate subsidy of $50,000 to initiate the survey (other sources are expected to provide the $1 million necessary for the study); to endorse the proposal itself.

The survey, expected to require at least two years, would be organized so that various groups will investigate their own specialties.

It would be the new committee's responsibility to appoint a director and small staff to assist in detailing the program, and later administer it under the committee's auspices. Progress reports would be made to ECPD and EJC.

• **What is sought**—Gathering of facts, analyzing these facts, making recommendations, and providing ways and means of implementing the recommendations would all fall within the scope of the survey. It would deal with:

• Professional services and responsibilities—What are the strictly professional responsibilities of the engineer, and how does he influence the application of his efforts; how effective are various codes of ethics; what can be done to make the engineer a broader person?

• Supply—A general and detailed study of the shortage of engineers; how engineers are used; demands of other professions; how to alleviate the shortage; how will a greater number of engineers affect the members of the profession?

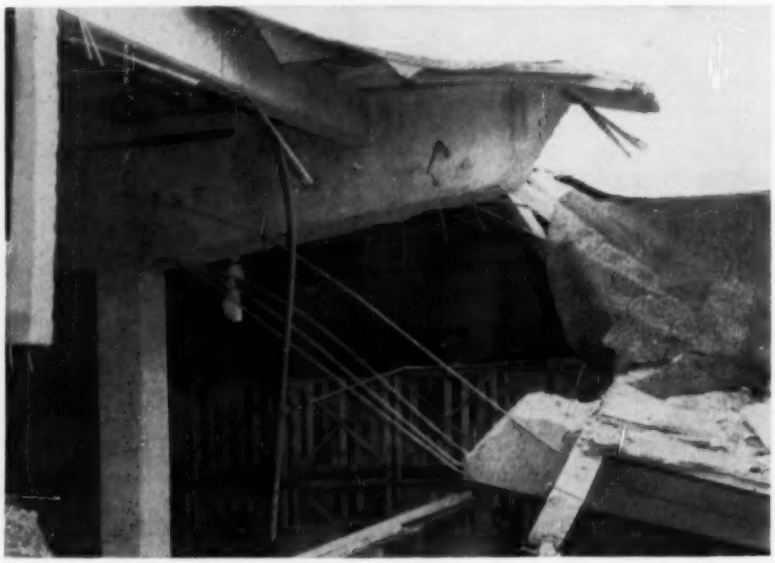
• The individual—A study of the engineer as a social, cultural and economic entity; what makes him tick; how he reacts to the different facets of his profession; the interaction between the engineer as a person and as an engineer.

• Sub-professional service—What are the human and mechanical aids given the engineer; how much does the engineer have to do himself; what are the characteristics of, and prospects for more, sub-professional services?

• Education—A more thorough examination of present information of education, including the education of the engineer out of school.

• Registration and unionization—Extent and effects of both.

• Organization—Extent and effects of organizations in the profession; influence of such organizations; the question of unity.



Failure Sparks More Studies

New investigations of the behavior of continuous reinforced concrete framing have been initiated following collapse of a concrete warehouse roof Sept. 5 at Robins Air Force Base, near Macon, Ga. The building had been in use about 18 months.

The collapse took place at 3 a.m. No one was injured, but some of the material stored in the building was damaged.

The failure occurred in a girder in each of two adjacent bents well inside the building, near an expansion joint. Both girders broke near an inflection point and the other ends slid off the expansion bearings. About 5,000 sq ft of the 1,600x400-ft structure was involved.

• **Failure follows precedent**—Preliminary investigations by the Corps of Engineers, and by Amman & Whitney and other consulting engineers engaged by the Chief of Engineers, indicate that the failure was similar in nature to that in a warehouse at Wilkins Air Force Base, Shelby, Ohio, on Aug. 17, 1955. Consultants have reported that the Wilkins AFB failure could have been caused by a combination of conditions, such as faulty design assumptions, over-estimation of tensile strength of concrete, "frozen" expansion joints and volumetric changes in the concrete (ENR Jan. 12, p. 21). However, new studies are being made as a result of the Robins AFB failure.

Both warehouses had been constructed for the Air Force under the supervision of the Corps of Engineers. L. P. Kooken Co., Baltimore, was the structural engineer.

• **Design had been changed**—Like the one at Wilkins AFB, the warehouse at Robins AFB is one-story, rigid-frame construction. However, the design had been modified in that the girders are reinforced at top and bottom for the full length and have web reinforcement throughout. In the Wilkins girders, top steel and web reinforcement were not used very far past inflection points. Also, instead of purlins made of prestressed concrete block, the warehouse at Robins AFB has a roof consisting of precast channel decking resting on cast-in-place reinforced concrete purlins, which are spaced 8 ft c-c and frame into the reinforced concrete girders of the rigid frames.

These girders are continuous in the 400-ft direction of the building, except for an expansion joint near the middle. Girders span 67 ft, and frames are 33 ft c-c. Dead load averages 2.33 kips per lin ft of girder and live load 0.66 kips per lin ft. The design complied with the 1951 American Concrete Institute Building Code, which was revised this year (ENR March 1, p. 26).

GULF PRODUCTS and FINE SERVICE

keep equipment rolling on Arkansas Flood Control Project

Atlas Construction Company, Vidalia, Louisiana, has the contract for a 70-mile irrigation ditch for an important flood control project in Arkansas. Gulf lubricants and fuels help keep every unit of equipment running smoothly on a tough operating schedule of 24 hours a day, 7 days a week.

With higher-than-ever operating costs threatening your profits, it will pay you to take stock of the advantages Gulf offers as a supplier of petroleum products.

Advantages like these: Quality lubricants that provide an extra margin of protection against mechanical delays; fuels that insure top engine performance; prompt delivery service from close-at-hand distribution points; and helpful petroleum engineering counsel.

You will find, as have so many leading contractors—ask Atlas Construction Company, for example—that these advantages add up to smoother operation and lower maintenance costs.

Send the coupon for a copy of Gulf's new brochure, "Gulf and Your Business."

Gulf Oil Corporation · Gulf Refining Company
1822 Gulf Building, Pittsburgh 30, Pa. ENR

Gentlemen:

Please send me a copy of your new brochure, "Gulf and Your Business."

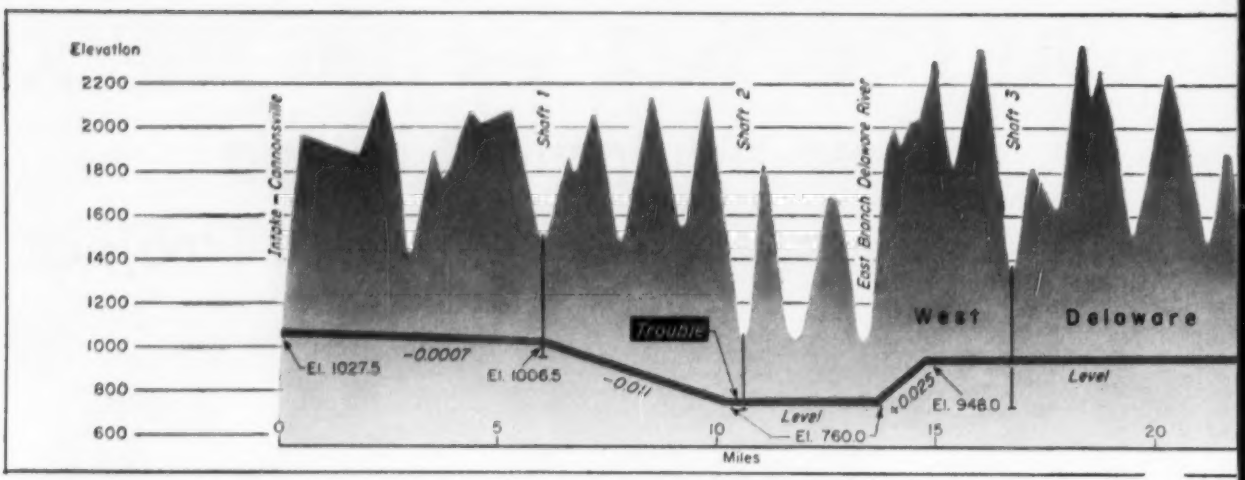
Name.....

Company.....

Title.....

Address.....

GULF



Faced with a tough water problem, contractor plugs, grouts and pushes on as

44-Mile Water

Everything was going fine on the $36-million West Delaware contract—the bore to tap West Branch flow for New York City's Board of Water Supply. Two shafts had been sunk to grade and turned horizontally, a third was under way, and up the line the tunnel from the Cannonsville portal had been driven three-quarters of a mile through the Catskill sandstones and shales.

Then, 200 ft west of Shaft 2, blasting in the west heading opened a large wet seam—wet to the tune of 400 gpm which gushed in to stop the miners in their tracks. Water poured from drill holes like from so many garden hoses.

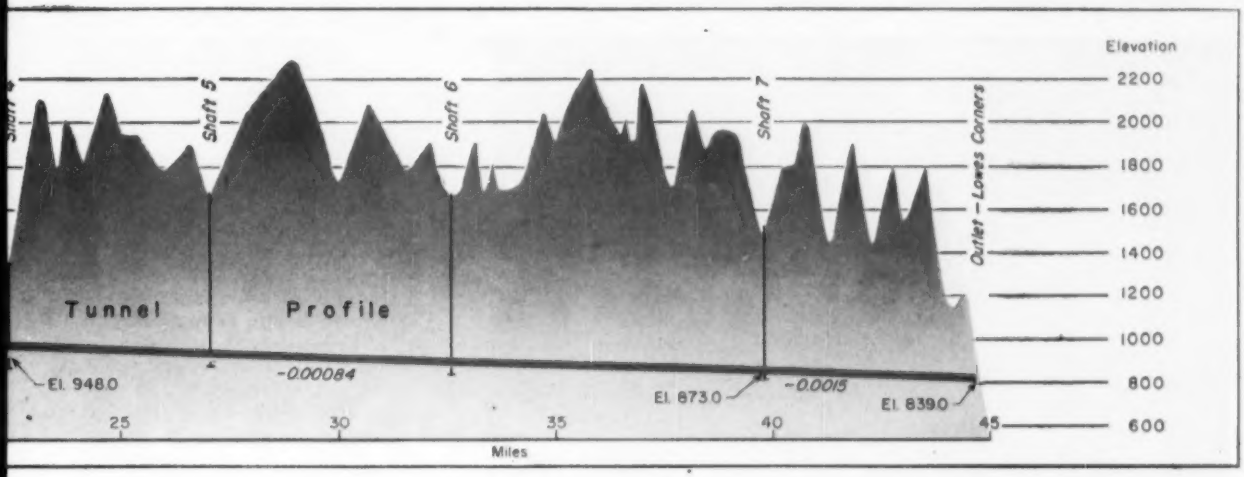
Grouting—the usual sealing method—was ruled out since the weak horizontal layers of rock that form the roof of the tunnel would be pushed in by the pressure of grout. The solution, not a new one to the contractor or the board, was the construction of a 40-ft-long concrete plug. With pressure grout pipes set in place before pouring, the section could be poured as shown in the sketch, then grouted, drilled and reblasted. The desired result, obviously, is a dry tunnel. To accomplish this, 16,000 bags of grout at pressures up to 1,000 psi. had to be pumped in, and finally—on the eighth day of the round-the-clock operation—the water was stopped.

The difficulty encountered was not unforeseen. When Drake-Grafe-Tecon-Winston-Conduit prepared to bid the job last fall, the novel setup of bids (ENR Nov. 3, 1955 p. 92) on a lin ft basis, rather than upon unit prices for excavation or concrete lining, provided for such extras as concrete bulkheads needed to meet unusual water conditions.

TROUBLE SPOT—Blasting opened a wet seam which deluged the miners with enough water to supply a town of 5,000. Tunnel progress here was stopped cold.

• **Tunnel progress**—Aside from the minor flood near Shaft 2, progress in shafts and the tunnel from the intake has been good. The usual cycle of drill-blast-muck is driving forward in the inlet heading at an average rate of 54 ft per day. The six-drill jumbo cuts a 53-hole pattern which pulls about 10 ft per advance. Air-driven muckers have replaced the electric ones used on earlier tunneling here.

With an expected completion date of 1960 for the two tunnel contracts now under way, project superintendent Clancy O'Dell reports the work about 10% complete. A common construction headache persists, though—the tight steel situation may hold up delivery of permanent head-frames and roof-support steel. Work is currently proceeding using temporary frames and a reserve supply of roof steel, but without permanent set-up, further tunnel progress from shafts will be slow. The permanent head-frames were expected this month.



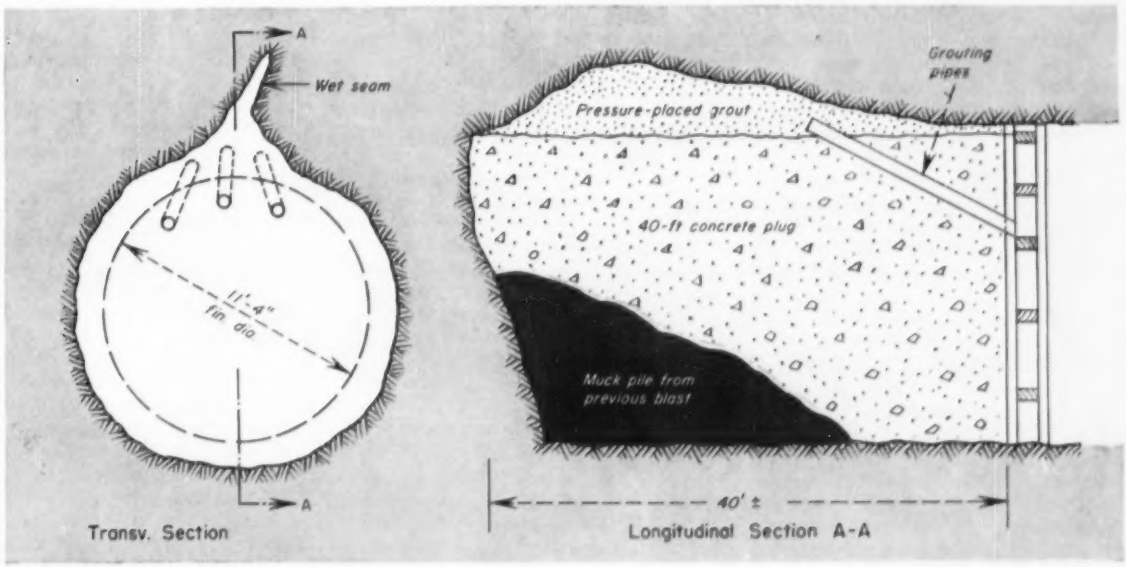
Tunnel Hits Its First Snag

Hoping to net a saving over the cost of a sheer wall excavation, the contracting combine's chief engineer, R. P. King, brought in shovel and dozer to make an open cut down to bedrock on Shaft 3. Taking advantage of a favorable side-hill slope, the crew cut down 62 ft to rock with only minor trouble from groundwater. Formed up from the bottom of the excavation, the shaft collar has been poured and backfilled. Balance of Shaft 3, about 400 ft in rock, will be sunk by the usual shaft-sinking method. Although King estimates the open-cut method cost almost as much as the other approach, it took less time, resulted in a better job.

• **Construction side of bid setup**—Other extras, besides bulkhead concrete and grout cement, included the roof-bolted steel straps and segmented rib steel supports. Rib steel, usually called for in wet, weak-rock sections, has been needed only in a few spots—roof bolting has proved sufficient along the rest of the 11-ft-4-in. circular tunnel.

As for the setup of the job on a lin ft basis with extras, engineer King is not sold on the idea. Designed to simplify estimating, the arrangement makes twice the work for the contractor, he says, since a record of costs by volume units must be kept anyway. From the standpoint of the board, estimates of work completed—the basis for interim payments—are easier to prepare by the new method, which also eliminates difference of opinion in case of "over-break."

• **Tunnel planning and design**—Preliminary surveys for the West Branch tunnel got under way in 1953, with USGS maps supplying basic information for the study of possible intake, outlet, and shaft sites. With the aid of photogrametric surveys by Lockwood, Kessler and Bartlett, a tentative



CONTRACTOR'S ANSWER—40-ft-long concrete plug, with grout to be pumped into the seam after concrete set. This was done by setting vertical circular form, with grout pipes in place before pour. Eight days and 16,000 bags of grout were needed.

. . . Water tunnel carries too much water, too soon

FORMING UP FOR THE POUR, while water flows from grout pipes. Grouting pressures up to 1,000 psi were employed in round-the-clock operation.

location for the dam was selected, and the outlet portal was set at the east end of the Rondout reservoir, 44 miles from the intake.

Next step—choice of the intake site—was made with one eye on the possible site itself, and another on the tunnel line, roughly set by the choice. At Cannonsville, topography and geology pointed to a spot five miles upstream from the dam. Practically no "dead storage" results from the upstream selection since the West Branch gradient is low, and the tunnel line chosen is two miles shorter than if the intake were set close to the dam. With adequate area for plant setup and rock rising steeply from the valley floor—to ensure the necessary cover for the tunnel with a short approach channel—the spot was a natural.

Meanwhile, the "other eye," the one watching the tunnel line set by the upstream intake, saw an equally favorable picture. In plan, the line could be reasonably straight without hitting built-up areas, costly from the standpoint of shaft site right-of-way. Seven shafts of reasonable depth at fairly level sites were spotted on the preliminary profile at intervals not exceeding seven miles—experience here has shown this spacing to be economic limit of tunnel driving for maximum efficiency. Ease of shaft site access was also insured by the selected line.

There was one hitch in the scheme—deep erosion in the valley of the Delaware's East Branch has cut the bed-rock floor to a low elevation. If a uniform tunnel gradient were adopted from the intake—the most desirable condition—borings indicated that the necessary rock cover would not exist at the intersection of the tunnel with this valley. In fact some portions of the tunnel would lie within the glacial soils that have partially refilled the valley.

To insure adequate cover, a portion of the tunnel between Shafts 1 and 3 was designed as an inverted siphon.

Carrying capacity of the circular section, which was designed with an average of 11 in. of concrete lining, is over 500 mgd. The expected yield of the reservoir is only 310 mgd. Preliminary estimates for the job indicate a capital cost of $450,000 per mgd of yield.

• **The overall picture**—The work currently under contract is only a part of the project, with history dating back to a 1909 report. The $140-million Cannonsville job is the third stage of a three-stage operation; the second stage is nearly done (ENR Feb. 16 p. 194). Other phases of Cannonsville still to be let will include the dam itself and contracts for 24 miles more of tunnel, four shafts and the outlet portal. Main section of the dam will be earthfill, about 175 ft high and 900 ft long. Studies are in progress to determine whether a concrete cut-off wall will be needed. Board Senior Geologist Thomas Fluhr points out that location of the dam at a point where a large knoll constricts the normal width of the West Branch valley makes possible considerable saving in the dam's length. The construction of an impervious blanket on the upstream face of the knoll will render it usable as a sort of pre-formed section of the dam. The reservoir created will extend six miles upstream from the dam, flooding out several small villages including Cannonsville, and will have a capacity of about 143 billion gal.

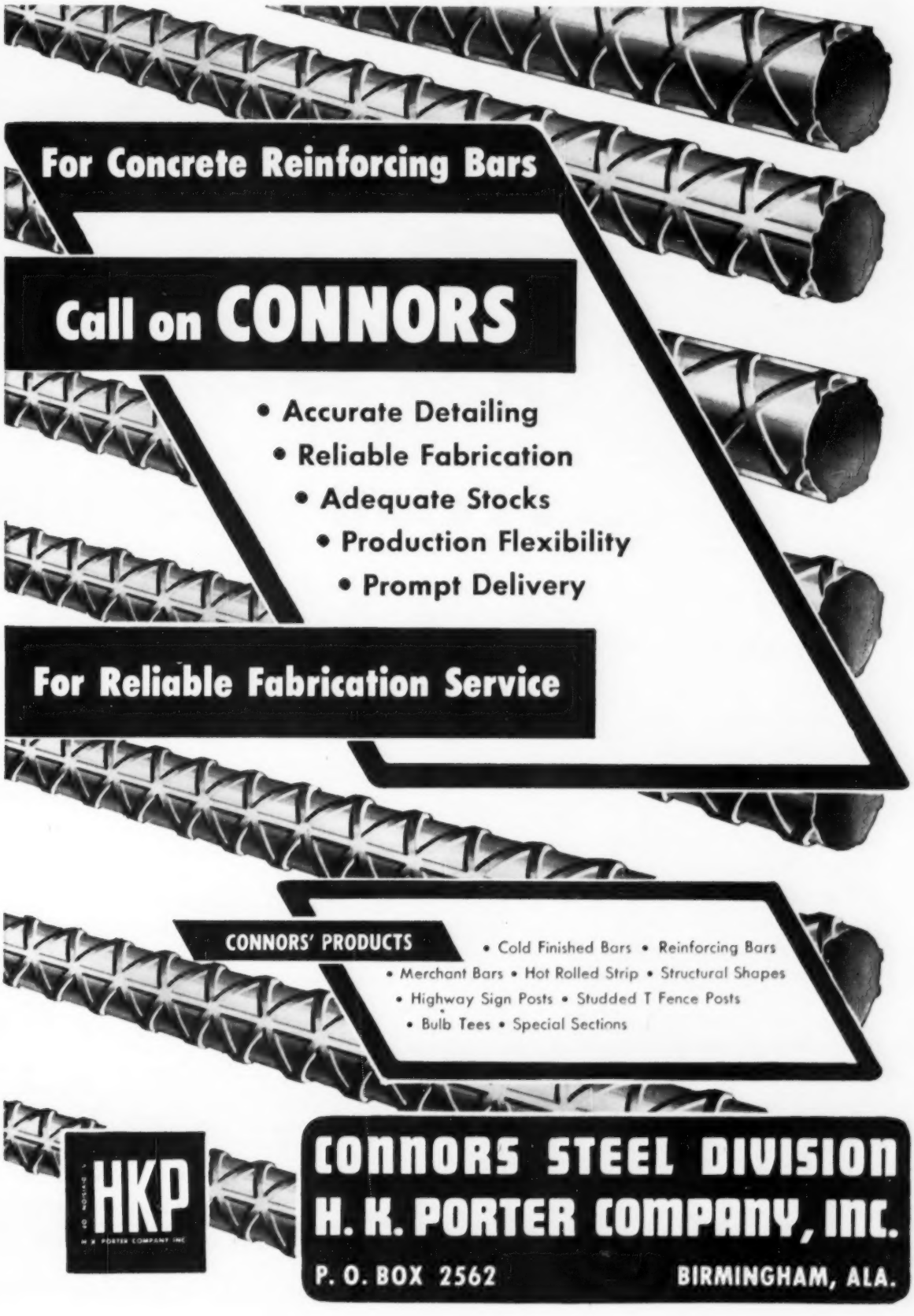
Other sidelights of the dam and reservoir include relocation of many miles of state and county roads, and the construction of appurtenant bridges.

• **Local problems**—While contracting forces are busy with watery seams and hard-to-get steel, Board of Water Supply people have problems of a different kind. The first attempt to get the dam phase out of the preliminary design stage—a contract for access roads, bridges and foundation explorations—got a courteous "No, thank you" from contractors (ENR June 7, p. 19). Since this "false start," the board has decided to drop the explorations from the scope of the job, which should be out for bids shortly.

Two additional contracts covering the remaining 24 miles of the tunnel are still to be let. Pending the establishment of wage rates for tunnel work in Sullivan County between contractors and representatives of labor, no date has been set for advertising of bids.

• **End of the line?**—While the work of the Board of Water Supply is not near being finished—the $140-million Cannonsville project is not due to be done until after 1961—the board may be approaching the "dollar barrier" for long-distance water supply. But Cannonsville will boost the safe yield of the supply to 1,820 mgd—enough to meet 2000 A.D. demands. And right now the year 2000 looks a long way off as far as the Board of Water Supply is concerned.

Deputy chief engineer N. Leroy Hammond is in charge of construction for the board, whose chief engineer is Stanley M. Dore. Board president is Irving V. A. Huie.


For Concrete Reinforcing Bars
Call on CONNORS
• Accurate Detailing
• Reliable Fabrication
• Adequate Stocks
• Production Flexibility
• Prompt Delivery
For Reliable Fabrication Service
CONNORS' PRODUCTS
• Cold Finished Bars • Reinforcing Bars
• Merchant Bars • Hot Rolled Strip • Structural Shapes
• Highway Sign Posts • Studded T Fence Posts
• Bulb Tees • Special Sections
HKP
CONNORS STEEL DIVISION
H. K. PORTER COMPANY, INC.
P. O. BOX 2562
BIRMINGHAM, ALA.

This network of ramps, takeoffs and highway composes the three mile stretch of New Jersey Turnpike extension worked by Geo. M. Brewster & Son, Inc.

"Flex-plane .....makes the

REMARKABLE SELF-WIDENING FINISHER MAKES SMOOTH WORK OF COMPLEX HOLLAND TUNNEL EXTENSION OF JERSEY PIKE!

▲ Flex-Plane's Triple Lap Frame provides unsurpassed steadiness even at its widest width. Here machine works 23' slab in extended position.

"There's only one machine that could have done this job," states Byron Craig, Paving Superintendent of Geo. M. Brewster & Son, Inc., "and that is Flex-Plane's Self Widening Finisher."

The job Byron Craig was talking about is the Newark Bay-Hudson County Extension of the New Jersey Turnpike, a three mile stretch of ramps, turnoffs, interchange lanes and service area cutoffs that connects the busy toll road with the Holland Tunnel.

"This job was a real challenge," continues Craig, "A typical pour would range from 4' to 14½' to 19', back to 15' - 8", then up again to 23'. The Flex-Plane Self Widener worked these variable width slabs as easily as though it were a straight pour. What's more I find Flex-Plane builds a 'paving man's' machine. It's strong and sturdy at its widest width, and it comes in a width selection that makes sense."

You'll find most leading paving firms own Flex-Plane finishers. It's the most popular finishing machine ever built. If you are in the market for finishing equipment let us put you in touch with a contractor in your area who'll convince you there's absolutely nothing to match it.

THE FLEXIBLE ROAD JOINT MACHINE CO.

8000 THOMAS ROAD, WARREN, OHIO

10083

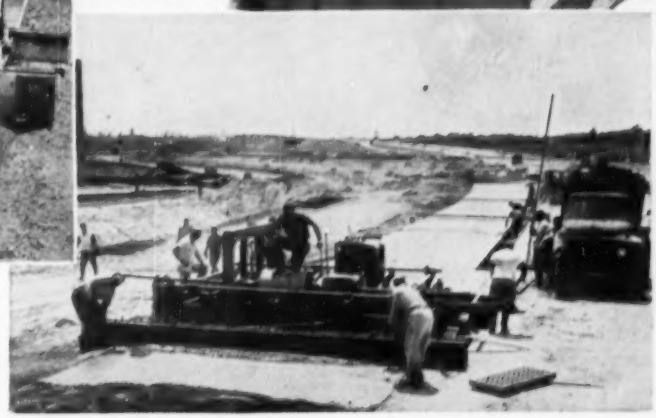
WORLD'S LARGEST MANUFACTURERS OF CONCRETE FINISHING EQUIPMENT

difference"

Byron Craig, Paving Superintendent, shows type of progress chart he used to map pours.

▲ Typical slab section. Note unusual tapering. Brewster was able to maintain above average pour with a single Flex-Plane machine without a spreader.

Here machine works narrow take off strip in contracted position. Three mile stretch had 10 such strips plus 8 ramps and one underpass. ▶



Usual procedure is dig, then build—but switching the sequence saved $50,000 on falsework for a 218-ft concrete dome

1. Columns (arrow) were cast and backfille

3. Plywood-lined in part, but mostly exposed earth . . .

4. The hill was covered with concrete,

Dome Roof Formed on Mound Needs

Reversing the usual sequence of first excavating, then building, the contractor on Albuquerque's new dome-roofed civic auditorium rounded off a natural mound of earth on the site and cast the 218-ft thin-shell concrete roof on the convex surface. He then dug away the earth beneath, leaving the dome standing clear on a ring of columns which had been built and backfilled earlier.

Before making the final decision to follow the unusual procedure, Ferguson, Stephenson & Associates, Albuquerque architects who designed the $1-million project, considered two other methods: (1) erecting steel-supported formwork; (2) casting the dome on grade, then hoisting it lift-slab fashion. The mound-forming method got the nod on the basis of an estimated $50,000 saving.

First step in the job was column construction. The builders excavated a deep trench around the periphery of the mound and cast 22 individual reinforced-concrete spread footings and rectangular columns. The columns range in height from 24 ft to 42 ft. Depth in the radial direction varies from 4 ft at base to 6 ft at top. Thickness is a uniform 18 in.

After the columns were backfilled, the next step was to prepare the mound—an easy-to-work mixture of sand, gravel and natural binder—as a form surface for the underside of the dome. The builders applied a layer of fine stone, compacted it with rubber-tired and sheepsfoot rollers, finished it off with a hand-pushed lawn roller. The resulting surface was smooth enough for much of the shell interior; however, for a 30-ft peripheral belt to be exposed in the completed building, they laid ¾-in. plywood on the mound.

The spherical dome (radius 256 ft) rises 23 ft from spring line to underside of the shell at the center. Thickness of the concrete within a 160-ft-dia circle about the center is 5 in. Outside the circle, the shell thickens gradually, sweeping smoothly into the ring girder, 24 in. thick and 36 in. wide. Shell is reinforced in both radial and circumferential directions.

It took 1½ weeks to place the shell concrete (about 1,000 cu yd). Ready-mix operators chuted the first of four

then . . .

2. A natural mound was shaped, tamped, smoothed . . .

then . . .

5. Excavated to expose the dome and columns.

No Shoring

concentric pours directly into place. Second and third lifts were handled by crane, and the final lift was crane-to-hopper-to-buggy, the buggies traveling on wood runways.

After the concrete had set, the ring girder was prestressed with 655 turns of high-strength wire, tensioned to 140,000 psi. Supplied under specification ASTM A227-47, the wire has a yield-point strength of about 190,000 psi. Using a tractor-drawn tensioning drum that applied stress with a dynamometer instead of a die, a subcontractor wound the steel into a channel cast into the edge of the heavily reinforced girder. This work was done by Crom, Inc., of Gainesville, Fla., manufacturer of the equipment. Turns were anchored individually and each layer grouted. When all turns were in place, bars that had been left projecting from the girder were bent over the stressed collar and the groove was filled with concrete.

The next step was excavation of the mound, no longer needed as support for the shell. Shovels and bulldozers dug out 120,000 cu yd of earth, exposing the columns and interior of the dome. The remainder of the job was completed by conventional methods.

The finished auditorium has a permanent seating capacity of 3,500 in a balcony surrounding the 142-ft-dia concrete arena floor, and room for 2,500 temporary seats on the arena floor itself. Balcony and arena cover the entire area under the dome. Enclosing this area is a wall composed of an 8-in. concrete block wainscot, a metal acoustic middle section and a top band of clerestory windows just under the ring girder.

Outside this wall, an 8-ft corridor girdles the auditorium at rear and sides. Departing from its circular course at the front, however, the 12-in. brick outer wall of the corridor encloses the lobby, mezzanine and service rooms adjoining the main

High Early Strength

Cold Weather Safety

Higher Ultimate Strength

Get All 3 By Adding SOLVAY Calcium Chloride To Cold Weather Concrete

You can offset the strength and time losses resulting from temperatures of 50°F. or lower *and gain in ultimate strength* by adding Solvay Calcium Chloride to your concrete mix.

Speed finishing, remove forms earlier, save 2—4 days operating time. Get all the facts and figures in the booklet entitled, "The Effects of Calcium Chloride on Portland Cement".

NEW, 25-LB. BAG
Easy to Handle
Provides Accurate Measure

GET THE COMPLETE STORY
GET FREE BOOKLETS NOW
MAIL COUPON

SOLVAY

Allied Chemical

SOLVAY PROCESS DIVISION
ALLIED CHEMICAL & DYE CORPORATION
61 Broadway New York 6, N. Y.

Please send me WITHOUT OBLIGATION OR COST your booklet:

☐ "When the temperature drops BELOW 50°F., do you know what happens to CONCRETE?"

☐ "The Effects of Calcium Chloride on Portland Cement."

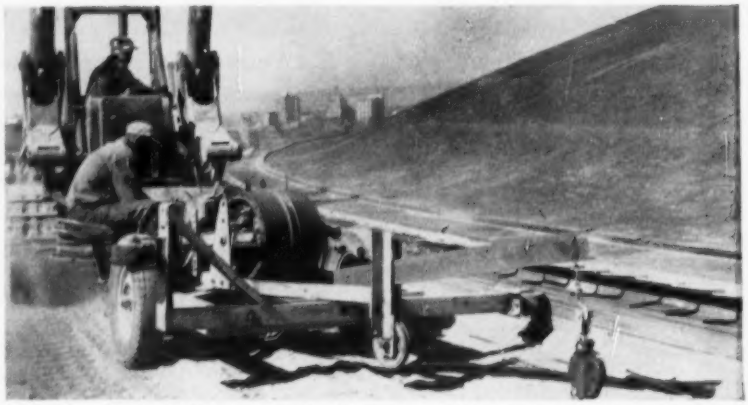
Name .....

Company ..... Position .....

Address .....

City ..... Zone ..... State EN9

RING GIRDER was formed with a channel for prestress collar.



PRESTRESSING DEVICE wound 655 turns of high-strength wire, tensioned to 140,000 psi, into the channel in the ring girder. Tension was applied by a dynamometer.

EXCAVATION began on the fringes of the hill before all the concrete was in place. 120,000 cu yd were dug out to expose columns and dome and bring the site to grade.

auditorium. Total floor area is about 70,000 sq ft.

Acoustic treatment of the auditorium includes suspended sound baffles and a conical ceiling of acoustic tile. The dome exterior is topped with 2 in. of rigid insulation and a builtup roof. The building is air-conditioned. Catwalks provide access to amplifying equipment, air-conditioning ducts and lighting facilities.

Gordon Ferguson was the partner in charge for Ferguson, Stephenson & Associates. General contractor was Lembke, Clough & King, of Albuquerque.

Save time and money on low-cost drainage jobs...

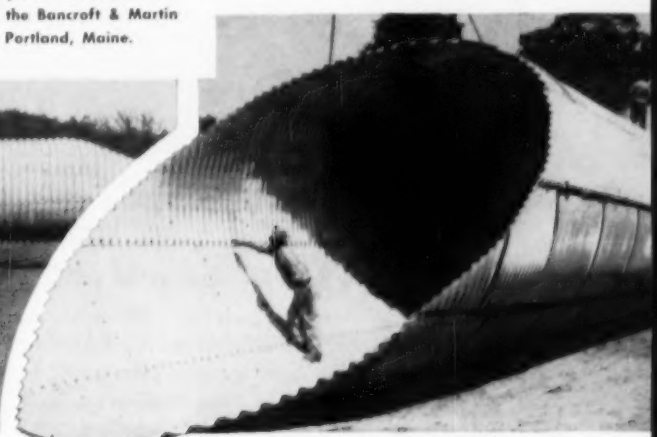
The Harris Brook Bridge, near New Portland, Maine, is a 156"-diameter, 86'-long pipe culvert made from AMBRIDGE Sectional Plate by the Bancroft & Martin Rolling Mills Company, South Portland, Maine.

AMBRIDGE *Sectional* PLATE

AMBRIDGE Sectional Plate for pipes, arches and pipe-arches meets the specifications of the American Association of State Highway Officials, and can be adapted to all state, railroad and government specifications.

Fabricated in 2" deep corrugations on 6" centers with standard punchings . . . *and galvanized after fabrication*, AMBRIDGE Sectional Plate is furnished to accommodate any shape or size of pipe, arch, or pipe-arch, complete with bolts. Special details, such as asphalt coating, hook bolts, beveled ends, and skewed ends, are furnished as specified for each job.

For further information, we suggest that you contact the office nearest you. Or, an inquiry direct to our Pittsburgh headquarters will bring detailed information.



AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION • GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.
Contracting Offices in: AMBRIDGE • ATLANTA • BALTIMORE • BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • ELMIRA • GARY HOUSTON • LOS ANGELES • MEMPHIS • MINNEAPOLIS • NEW YORK • ORANGE, TEXAS • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • ROANOKE • ST. LOUIS • SAN FRANCISCO • TRENTON
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

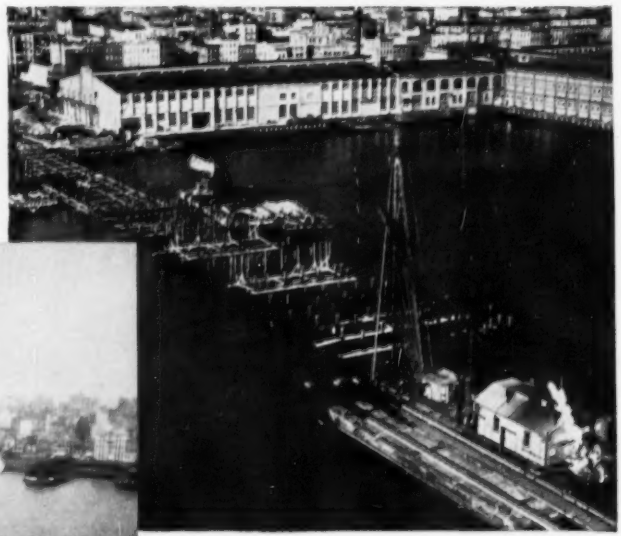
AMBRIDGE *Sectional* **PLATE** USS

UNITED STATES STEEL

PORT OF NEW YORK'S NEWEST, WIDEST PIER

rests on piles driven by McKIERNAN-TERRY HAMMERS

Pier C at Hoboken, New Jersey, operated by the Port of New York Authority, and completed in March 1955, is 700 ft. long and 328 ft. wide; and rests on steel H-beam piles driven through dense, cohesive silt and sand to solid bedrock which is 140 ft. below mean low water at its offshore end and 90 ft. below mean low water at the bulkhead line.



The contractor, J. Rich Steers of New York City, made sure that the many required piles would be driven without a hitch by using McKiernan-Terry Pile Hammers exclusively; and employed 11B3 Double-Acting Hammers and S8 and S10 Single-Acting Hammers for the purpose.

Write for bulletins explaining the many superior features of McKiernan-Terry pile-driving equipment.

Single-Acting Pile Hammer

11B3 Double-Acting Pile Hammer

McKIERNAN-TERRY CORPORATION

MANUFACTURING ENGINEERS

80 Richards Ave., Dover, N. J.

Plants at Harrison, N. J. and Dover, N. J.

MK-378

Cranes Move in Unison to . . .

. . . Erect 122-Foot Precast Span

A bridge that contains one of the longest spans for concrete girders to be both precast and prestressed has been completed at Santa Felicia Dam near Ventura, Calif. Included are four 122-ft-long T-girders spanning the dam spillway.

The job effectively illustrates the usefulness and economy of prestressed members of such length. And it also demonstrates dramatically the careful handling techniques that must be followed. One erection subcontractor allowed a girder to tip, shattering the concrete member. A second erection outfit left the job after moving a girder only a few feet. A third—Reliance Equipment Co.—finally moved and lifted the four girders successfully.

The long T-shaped beams are 4 ft 9 in. deep and have a 6-in.-thick stem with a 36-in.-wide top flange. The units were post-tensioned with seven cables, each having 12 wires of ¼-in. dia. The cables are in metal sheaths and are arranged in parabolic shape in a vertical plane. At midspan, the cables were laid one on top of the other with no clearance between—although there was 4-in. concrete cover at the bottom. A jacking force of 86,500 lb was imposed on each cable. With shrinkage and stress relaxation, the residual effective force is figured to be 75,000 lb.

The bridge also has two shorter spans of 31- and 51-ft lengths with prestressed T-girders.

The one-lane, 12-ft-wide structure will be used as a service facility and will not be open to the public. Piers are built for an additional 12-ft width should an additional lane be required at a later date.

At present the bridge has no wearing surface. The upper flange of the girders serves instead. The units were tied together by transverse diaphragms post-tensioned by ¾-in. rods. The bridge was designed for an AASHO H-15 truck loading.

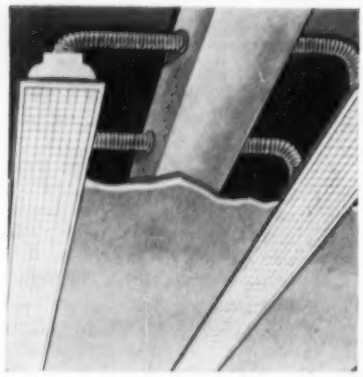
The four 38-ton units were cast on the spillway apron. After post-tensioning they had to be moved down the spillway and lifted some 60 ft over the spillway wall to the piers. Part way through the moving maneuver, the girders had to be set down so that the cranes could get on the other side for the lift.

When the first girder was moved, it was inadvertently allowed to tip and shatter on the spillway floor. The accident occurred when one crane sling was slack and the other crane started lifting. The member had to be recast, which substantially delayed completion of the job.

During the successful lifting operations, a 3-ft-high "stiffleg" was mounted on top of the girder at each crane pick-up point (7 ft from the end of the member). The effect of this was to lower the center of gravity of the entire assembly and reduce the tendency to tip. Then with split-second timing to assure simultaneous pick-up and using rolling outriggers on the front of the cranes the moves were successfully made.

The prestressed girder design was bid in competition with other type bridges. Successful low bidding contractor, Howard Hays, Bakersfield, Calif., bid $40,000 for construction of the girders, piers, abutments, railing and fencing. This was $14,000 lower than the next bid for a steel Bailey bridge.

The dam (ENR Sept. 8, 1955, p. 43) and bridge are facilities of the United Water Conservation District, Santa Paula, Calif., for which Walter P. Price, Jr., is chief engineer and general manager. The structure was designed by T. Y. Lin and Associates, Los Angeles, with Felix Kulka and Herman R. Reuter, design engineers. Superintendent for the contractor was A. W. Douglas, with R. R. LeVitt as lifting and rigging consultant. Western Concrete Structures, Los Angeles, was subcontractor for post-tensioning work.



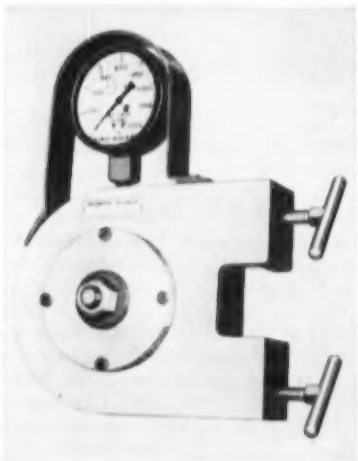
Air Diffuser and Luminaire Combined in Single Fixture

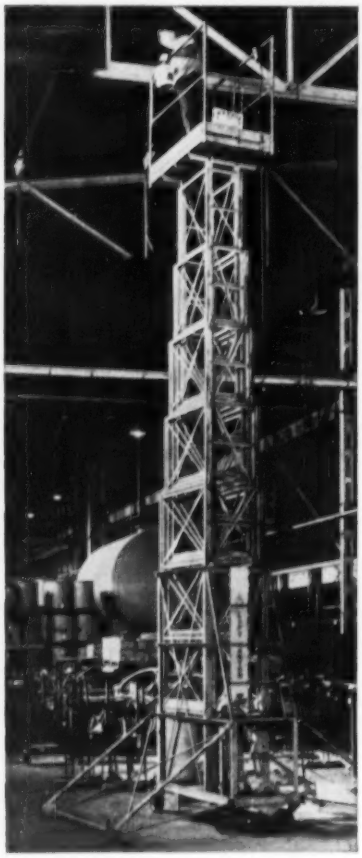
Two manufacturers have brought their particular specialties together in a combination air diffuser and luminaire called Multi-Vent Trofferlite. The air diffuser is completely built into the fixture, with no effect on the appearance of the unit. Adjustable to any type of dropped ceiling, the fixture is made with either egg-crate or baffle-type louvers or without louvers. The egg-crate louvers are available in either polystyrene plastic or steel. Benjamin Electric Mfg. Co., Des Plaines, Ill.; Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill.

Impact-Wrench Calibrator Reads Bolt Load Directly

Skidmore-Wilhelm's portable calibrator for pneumatic impact wrenches measures bolt tension directly in pounds when bolt, nut and washers are assembled in the 50-lb device and tightened with the wrench to be adjusted. Air pressure or tightening time can then be regulated to apply the torque needed for the desired bolt tension.

The calibrator takes ¾-in., ⅞-in. or 1-in. bolts 2½ in. or more in length. Built-in clamps anchor the instrument to a column or beam. The price fob Cleveland, including a wood case, is $345. Skidmore-Wilhelm Mfg. Co., 442 Green Rd., Cleveland 21, Ohio.





Telescoping Lift Raises Maintenance Man 40 Feet

A one-man-operated hydraulic platform lift called Ski-Ride telescopes to any height between 9 ft and 40 ft and locks in position while a workman does maintenance or repair jobs from a 28x48-in. work platform on top of the mast. The lift rolls from job to job on four 10-in. wheels. Capacity of the unit is 500 lb.

Safety features include steel rails and a toe board around the work platform, dead-man controls in the base and on the platform, and outriggers that open to 10 ft 9 in. Four bronze-bearing roller chains support each section of the mast.

In closed position, the lift is 6 ft 7 in. long, 2 ft 7 in. wide and 8 ft 9 in. high (7 ft 6 in. for the 35-ft model). Other models can be made to lift as high as 70 ft. Allied Mfg. & Sales Co., 3101 W. Grand Ave., Chicago 22, Ill.

Automatic Field Transcriber Gives Permanent Records

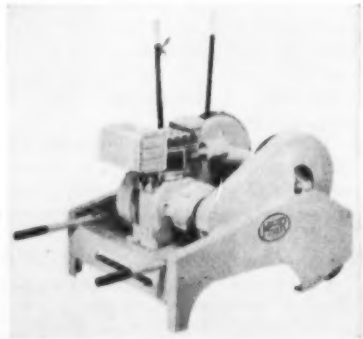
Automatic permanent recording of time-settlement data from soil consolidation tests is featured by a new field testing monitor. Recording instrumentation on the device includes a specially designed time-vs-deformation indicator and a compression detector said to be adaptable to most consolidometers.

The results are recorded on a circular chart, thereby tending to minimize human error in transposing field data to the usual square-root-of-time or log-time bases.

Each test appears as a curve on the circular chart. During the first hour the chart makes one full revolution, making possible settlement readings at 5-second intervals. After the first hour, revolution speed is automatically slowed to one revolution per day until stopped by the operator. K-W Autocon Recorder (Model 35). Tinius Olsen Testing Machine Co., 5653 Easton Rd, Willow Grove, Pa.

Half-Ton Hoist Added to Builders' Equipment Line

A newcomer to the Muller line of contractors' equipment is a hoist designed for small builders and roofers. Rated at ½-ton single-line pull at 200 fpm, the hoist has a 5½-in.-dia, roller-bearing-mounted drum 15 in. long, with 400-ft capacity for ¾-in. manila



WHIP WEIGHT PROBLEMS and HAUL

BIGGEST LEGAL PAYLOADS

THE DUMP BODY WITH THE "INCH WORM TRACTION"

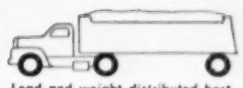
"Inch Worm Traction" lets you get out of soft spots by hydraulic power.

ANTHONY HYDRAULIC

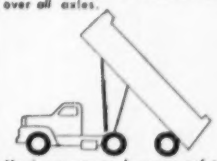
Teleramic

FRAMELESS Dump Trailer Units

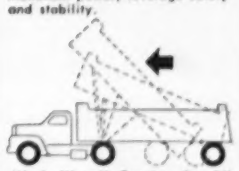
A completely new way to get more profit producing Payload—a frameless dump trailer that is literally "a dump body on wheels!" Elimination of the conventional extra trailer frame and other unnecessary dead weight mechanisms, makes possible up to 4000 lbs. extra *legal* payload by using a single Anthony telescopic hoist of new Teleramic head-lift design. Hoist location over tractor driving wheels gives excellent traction for spreading. Sloping tailgate lets you stockpile high and clean. *Write or call today for the "Complete Frameless Story."*



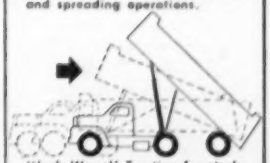
Load and weight distributed best over all axles.



Maximum power, leverage safety and stability.



"Inch Worm" Traction for fill and spreading operations.



"Inch Worm" Traction for stockpiling and batch work.

THE MOST COMPLETE LINE OF TELESCOPIC HOISTS

ANTHONY COMPANY, Dept. 5640, Streator, Illinois

Please send me additional information on Anthony Teleramic Hoists used for the following body classifications.

☐ Contractor Bodies ☐ Rock Bodies

☐ Asphalt Bodies ☐ **FRAMELESS** DUMP TRAILERS

I have the following make and model of truck.

.....

Name .....

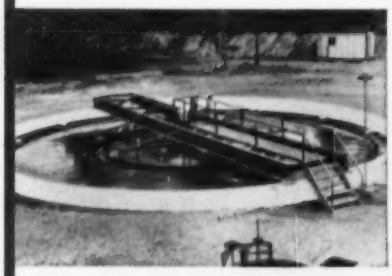
Firm .....

Address .....

City ..... State .....

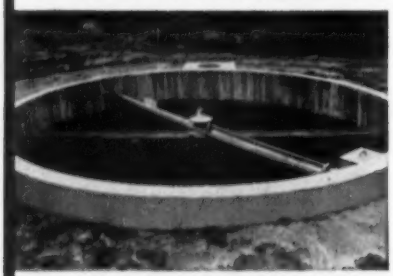
Yeomans manufactures the most complete line of Application-Designed sewage treatment equipment

which includes...

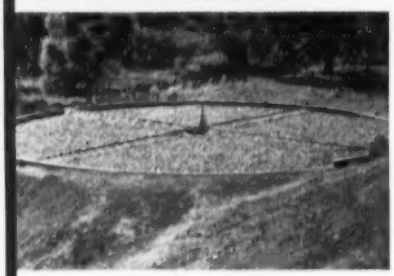


. . SPIRAFLO CLARIFIER for both primary and final clarification of domestic and process wastes. A clarifier of radically different design, the Spiraflo offers complete settleable solids removal; greater removal of finely divided particles; positive grease, scum oil removal; uniform velocity throughout tank; and straight wall design which reduces construction costs.

. . the CAVITATOR, a newly developed Yeomans unit for low cost treatment of both domestic sewage and industrial wastes. Perfectly suited for small communities, subdivisions, motels, resorts, schools and industrial plants, the Cavitator has excellent purification efficiency, extremely high oxygen transfer efficiency, and extremely low air requirements per pound of B.O.D. removed.



. . the WATER-WHEEL, a rotary distributor used with trickling filter systems in the secondary treatment of sewage. An exceptionally rugged, yet simple piece of equipment, the Water-wheel provides uniform distribution over the entire filter bed at all flow rates . . even the lowest. Costly accessories such as underground feed pipe, dosing chamber with siphon, center support, and mercury seal are not required.



. . YEOMANS ROTARY DISTRIBUTORS (both standard rate and high capacity). Standard rate units distribute evenly across the entire filter bed . . adjustable nozzles produce fine, well-aerated spray which carries down high volumes of oxygen. For high capacity filters, both the Yeomans high capacity type distributor and the Aero-Filter system are available.

Use this coupon to request any or all of the following technical bulletins:

- ☐ Yeomans Spiraflo Clarifier, bulletin 6791
- ☐ the Cavitator, 12-page booklet
- ☐ Water-wheel, catalog 6555
- ☐ Yeomans Rotary Distributors, bulletin 6504 . . also manual 6000

*name*_____

*company*_____

*street*_____

*city*_____ *zone*_____ *state*_____

YEOMANS, 1999-1 N. Ruby Street • Melrose Park, Illinois

manufacturers of: distributors • clarifiers • mechanical aerators • pneumatic sewage ejectors • digesters • centrifugal pumps

rope, 1,200-ft for ⅝-in. wire rope, and 2,700-ft for ¼-in. wire rope. Separate levers are provided for clutch and 16-in. brake. A spring-loaded device on the brake holds the load when the clutch is released. Power is supplied by a Briggs & Stratton air-cooled engine. Engine rating is 7.0 hp at 2,400 rpm, 8.1 hp at 3,000 rpm. MULLER MACHINERY CO., INC., METUCHEN, N. J.

Slip-On End Covers Designed To Cut Stored Pipe Corrosion

A new wrinkle for guarding stored pipe and tubing against internal corrosion—neopreme slip-on end caps—is now on the market. Teamed with a small amount of dehydrating agent, the caps are designed to provide an effective seal against air, moisture, fumes, dust and small animals. Neopreme is used because of its durability under the action of oil, acids and other unfavorable conditions.

Two types of caps are currently available—a lightweight roll-on cap for pipe of 2- to 10-in. dia, and a heavier slip-on cap for diameters up to 20 in. Thickness of the slip-on covers is ⅛ in.

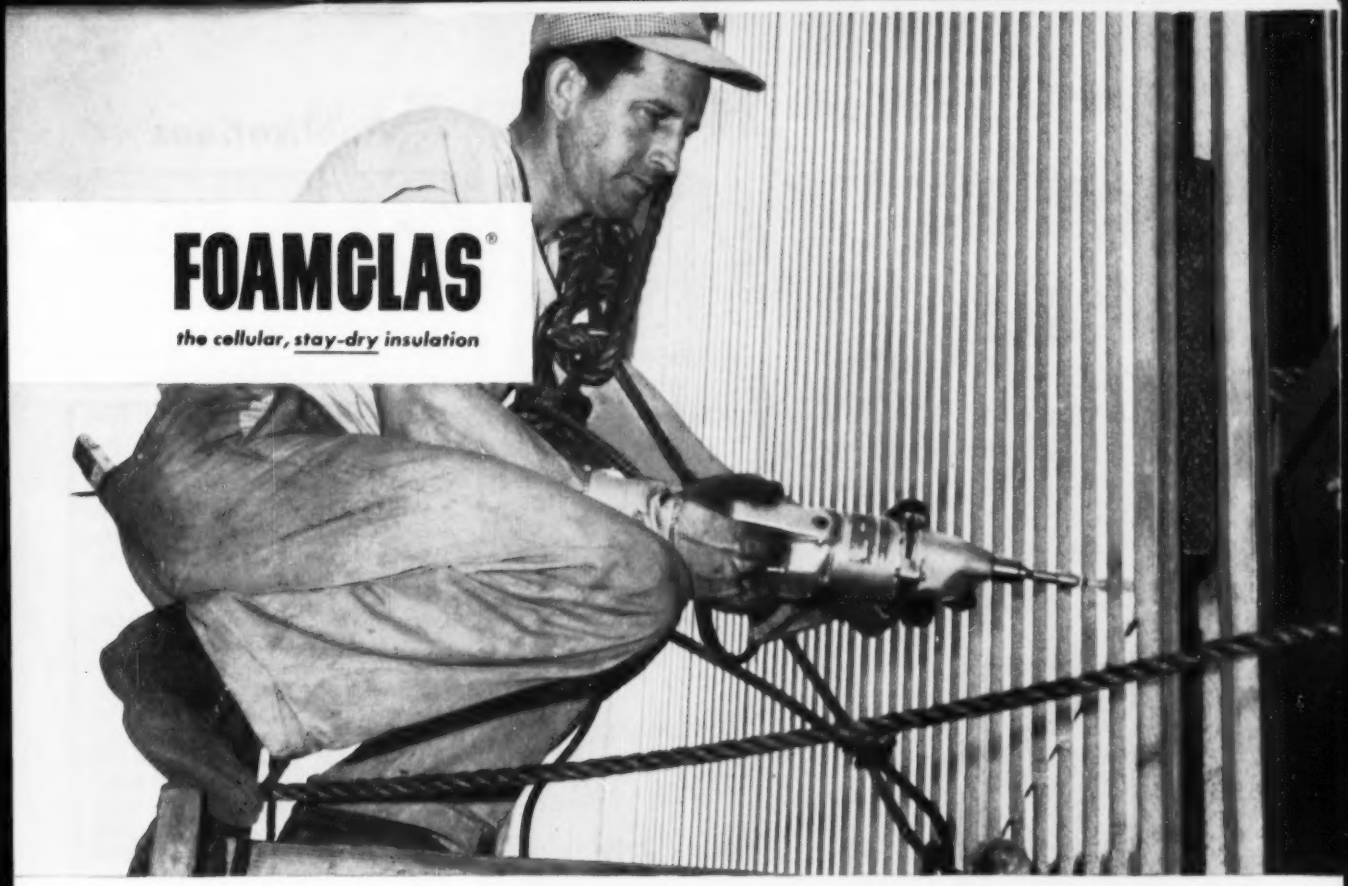
Prime application of the protective caps is with threaded pipe ends, but they can also be used for protection of heat exchanger tube bundles, well casing and with fittings in the petroleum industries. PROTOKAP, INC., 625 WEST BUILDING, HOUSTON, TEXAS.

Vibration Mount Has Twin-Screw Leveling

Twin leveling screws permit adjustments up to ¾ in. in the Universal Lev-Elasto Damper, an anti-vibration mount for machinery. The top plate of the mount is covered with a felt pad, the bottom plate with ribbed neoprene. Leveling screws are between the two plates. The top plate has a tapped hole for bolting down machinery. However, a machine can be cemented or merely rested, unattached, on the mount. The load range of nine available sizes varies from 65 lb to 12,000 lb. Prices run from $6 to $35. KORFUND CO., INC., 48-23M 32ND PL., LONG ISLAND CITY 1, N. Y.

FOAMGLAS®

the cellular, stay-dry insulation



Duquesne Brewing's 3½" thick curtain wall was erected at job site. Ribbed aluminum back-up sheet was placed against supporting members and secured with drive screws. FOAMGLAS blocks were placed against back-up sheet and temporarily secured with adhesive. Ribbed aluminum facing sheet was then set in place and secured with self-tapping screws on 8" centers driven completely through facing sheet, FOAMGLAS and back-up sheet. Drilling through the FOAMGLAS did not impair its inherent moisture resistance.

At Duquesne Brewing Company's new bottling plant...

This FOAMGLAS insulated aluminum curtain wall went up fast—cost only $1.31 per square foot!

This ribbed aluminum curtain wall "sandwich"—insulated with a core of strong, moisture-proof FOAMGLAS—was erected faster than conventional walls at a cost of just $1.31 per square foot. The Duquesne Brewing Company of Pittsburgh, Pa., used it to build a new bottling plant designed and engineered by Peth and Reed, Pittsburgh.

Selection of FOAMGLAS as the core insulation was doubly important. First, its unusual strength, dimensional stability and rigidity helped make stronger wall panels—eliminated possible sagging or buckling after installation.

Most important, however, was the FOAMGLAS structure of minute glass cells, each a dead air insulating unit permanently sealed against moisture. Duquesne faced a possible condensation problem in the bottling plant walls. To solve it, the aluminum siding's ribs were designed to serve as small "chimneys" for condensation drainage. That meant moisture would drain across the surface of the core insulation. Only FOAMGLAS, being inherently moisture-proof, could serve under these conditions... and could be counted on for a constant insulation value for the life of the building.

Whatever *your* insulating problem, it will pay you to rely on FOAMGLAS for dependable, long-life insulating service. It's moisture-proof . . . inorganic . . . incombustible . . . dimensionally stable . . . strong and rigid . . . light in weight . . . acid-proof . . . vermin-proof. Prove these properties to yourself with six simple tests easily performed in your own office. Send for a FOAMGLAS sample and complete testing directions today. Address . . .

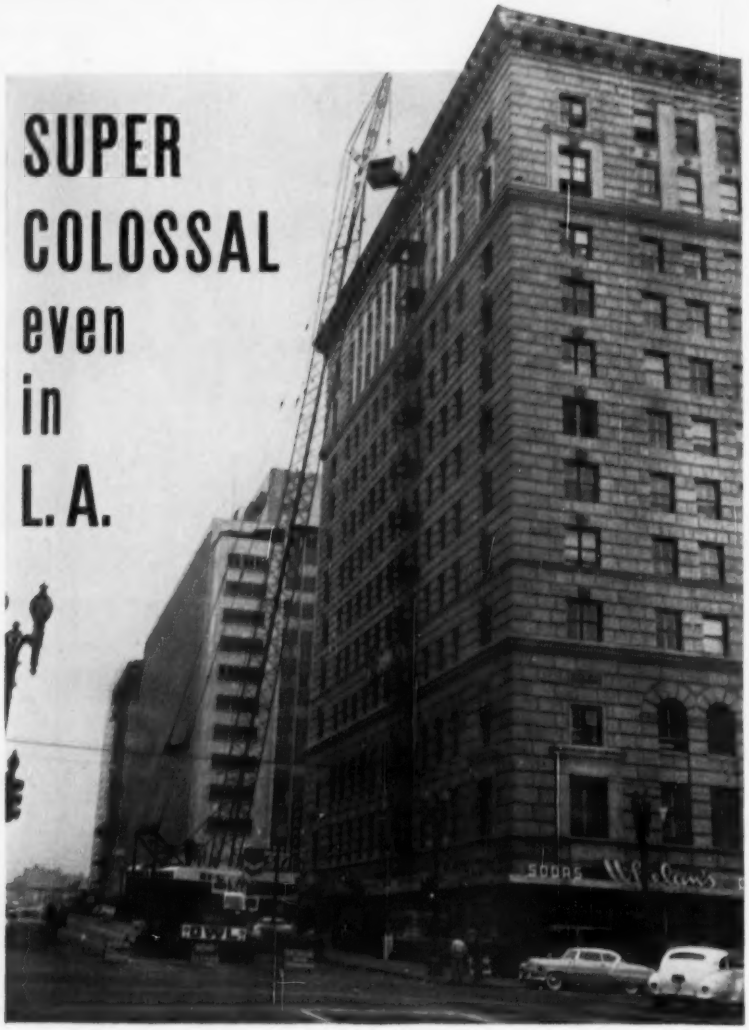
Future enlargement of the Duquesne Brewing bottling plant can be accomplished economically with aluminum-FOAMGLAS curtain wall. Existing wall can be removed, additional structural members erected and dismantled wall sections re-used to enclose expanded area.

Pittsburgh Corning Corporation

Dept. K-96, One Gateway Center
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St. W., Toronto, Ontario

PITTSBURGH PC ®

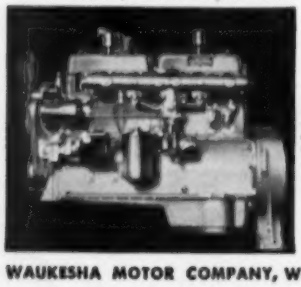
also manufacturers of PC Glass Blocks



Los Angeles probably saw its highest hoist—10 tons of refrigeration machinery lifted atop the 12-story Roosevelt Bldg.—by a Waukesha-powered, 50-ton American Hoist & Derrick Co. 795-Crane. The self-lifting boom, with its stinger, was 190 ft. high. The Crane is mounted on a Cook Bros. CT-450 Carrier which is also Waukesha-powered. The Owl Truck & Construction Company of Compton, California, own and operated the crane. The job took only one day, instead of the estimated five days needed with a stiff leg.

WAUKESHA ENGINES

Powering Crane (boom)—140-GK
Waukesha Gasoline, six cylinders, 4½-in. x 5½-in., 525 cu. in. displacement.

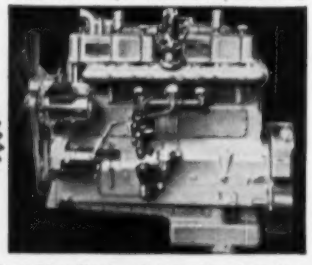


Send for Bulletins 1548 1553

50th ANNIVERSARY Waukesha MOTORS 1906-1956

322

Powering the Carrier—145-GKB
Waukesha Gasoline, six cylinders, 5¼-in. x 6-in., 779 cu. in. displacement.



WAUKESHA MOTOR COMPANY, Waukesha, Wisconsin • New York • Tulsa • Los Angeles

Publications

Plastic pipe—Special qualifications of polyethylene plastic pipe are given in 8-page bulletin CE-57 along with flow charts, installation instructions and information on uses of the material. Weights, maximum working pressures, sizes and prices are also tabulated. SUPPLEX CO., GARFIELD, N. J.

Tank, trench and pool linings—A new brochure describes "Hydromat" asphalt liners. The liners are weather-coated felts on a core of blended asphalt and specially selected fibrous and filler materials. Bulletin H-56, W. R. MEADOWS, INC., 7 KIMBALL ST., ELGIN, ILL.

Process filtration—A continuous vacuum-type horizontal filter is described in detail in a new 4-page bulletin recently released. Complete with operation flowsheet and photographs, the bulletin gives outstanding features, design, operation, sizes and capacities of the rotary filter. Among features highlighted are east of installation—units up to 15-ft dia are shipped complete—and high rate of slurry feed. BULLETIN NO. 7201, DORR-OLIVER, INC., BARRY PLACE, STAMFORD, CONN.

Sewage equipment—A 63-page presentation covering a wide range of sewage treatment equipment has just been released. The booklet gives details, drawings and descriptions of typical units in treatment processes. Also included are figures on standard sizes giving capacity and power requirements. Among units covered are various types of screens, grit collectors and washers, sludge collecting equipment, controlled flocculation facilities, equipment for biofiltration plants and auxiliary mechanisms. Copies of the catalog, designated No. 905, may be obtained from JEFFREY MFG. CO., COLUMBUS 16, OHIO.

Protective coatings handbook—A 30-page booklet, Tygon Protective Coatings Bulletin No. 760, covers the use of Tygon coatings in mild and severe corrosive service. The Tygons are protective coatings designed to protect surfaces, which are exposed to attack by acids, alkalis, oils, water and alcohols. The new manual is designed to be used as a work book and gives data in the form of charts, tables, diagrams and illustrations. Included is information on surface preparation, priming, application methods, and maintenance instructions for the complete family of coatings and primers. Limitations of each coating are given as

with Monotube Foundation Piles...

CONTRACTOR SAVED 19 DAYS

PILE DATA

Type—Monotube
Diameter—12 inch
Gage—7
Number of piles—1438
Length—up to 90 feet

Constructed for:
United Illuminating Co.,
Bridgeport, Conn.

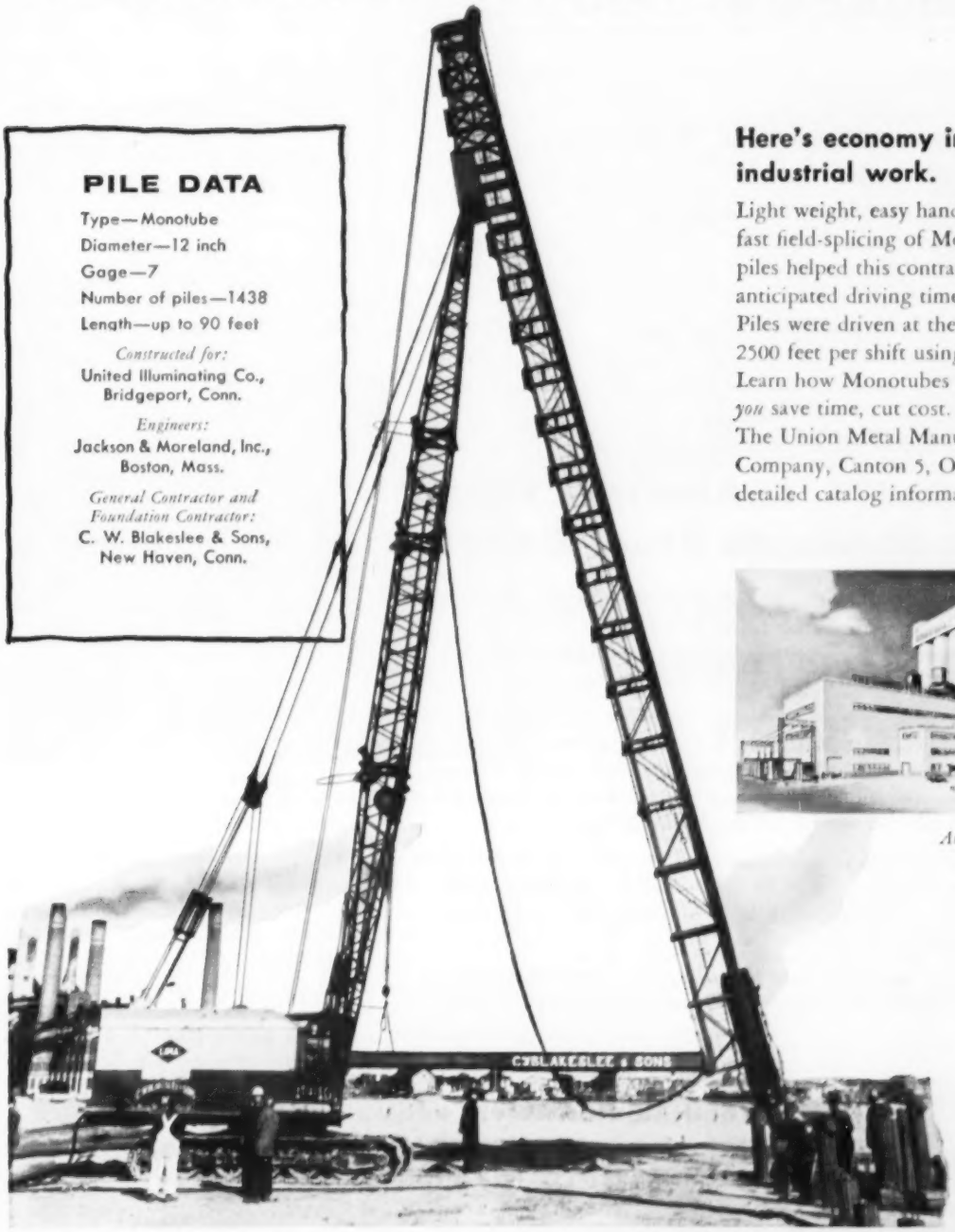
Engineers:
Jackson & Moreland, Inc.,
Boston, Mass.

General Contractor and Foundation Contractor:
C. W. Blakeslee & Sons,
New Haven, Conn.

Here's economy in industrial work.

Light weight, easy handling and fast field-splicing of Monotube piles helped this contractor reduce anticipated driving time by 19 days. Piles were driven at the rate of 2500 feet per shift using two rigs. Learn how Monotubes can help *you* save time, cut cost. Write The Union Metal Manufacturing Company, Canton 5, Ohio, for detailed catalog information.

Architect's rendering of Bridgeport Harbor generating station, Bridgeport, Conn.



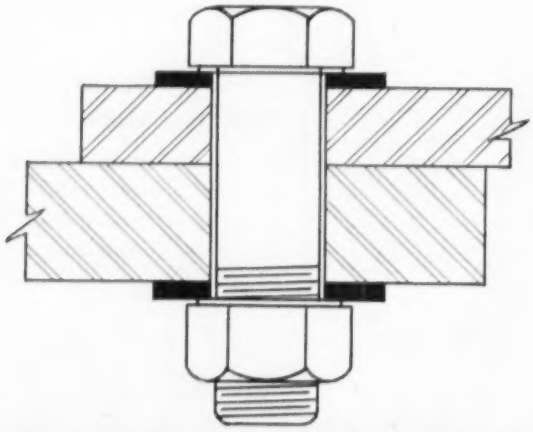
One of the two standard rigs, shown here driving batter piles. Any specified batter is easily met with Monotubes.

50 FIFTIETH ANNIVERSARY 1906-1956

UNION METAL
Monotube Foundation Piles

Specify—
MIL-CARB*
TRADE MARK

CARBURIZED WASHERS



for GREATER CLAMPING FORCE in High Strength Steel Bolting

Structural engineers and contractors *know* today that high strength steel bolts, *with properly hardened MIL-CARB* steel washers,* provide a form of steel jointing superior to riveting in many ways . . . including faster, more economical construction.

Don't overlook the fact that *no bolt is any better than its washers!* Don't let washers be the weak link in your steel framing construction chain. MIL-CARB carburizing permits *securing* and *holding* desired tension — eliminates "galling" or grinding of washer by the nut, *assuring permanent, uniformly strong, tight joints.*

MIL-CARB Washers are fabricated from Prime Carburizing Quality Special Soundness Steel to insure uniform quality control, always equal to or exceeding the rigid specifications for high strength bolted steel construction.

For your own protection and for uniformly sound construction, specify MIL-CARB* Carburized Washers and accept no substitutes.

Since 1887

MILWAUKEE WROT WASHERS

Distributed by

Leading Bolt Manufacturers and

U.S. STEEL SUPPLY DIVISION

UNITED STATES STEEL CORPORATION

208 South La Salle Street • Chicago 4, Illinois

WROUGHT WASHER MANUFACTURING CO.

The World's Largest Producer of Washers

2224 S. BAY ST., MILWAUKEE 7, WIS.

A 8798-3/5

. . . Publications

well as cost factors in a maintenance program. Also described is the care and cleaning of brushes and spray equipment. PLASTICS AND SYNTHETICS DIV., THE U. S. STONEWARE CO., AKRON 9, OHIO.

Lift trucks—Latest trends in lift trucl. design are shown in a 12-page brochure issued by the Hyster Co. The booklet is designed for quick reference of 25 different industrial truck models ranging in capacity from 1,000-30,000 lb. HYSTER CO., 2902 N. E. CLACKAMAS ST., PORTLAND 8, ORE.

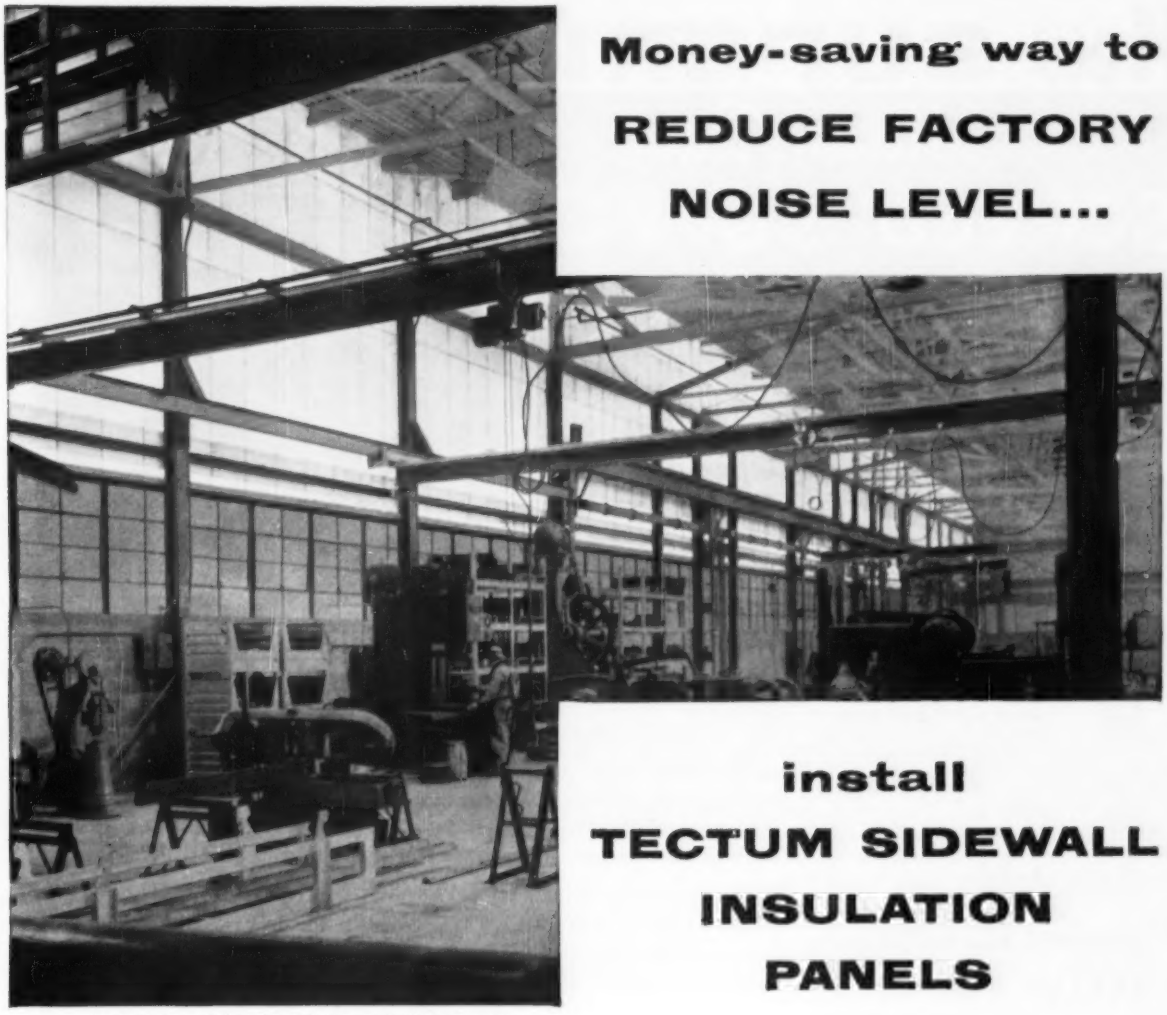
Spirit levels—Information on four types of spirit levels—telescope and plate levels, chambered and circular vials—is contained in a new bulletin just released. The bulletin, with data on unmounted as well as mounted levels, includes tables on sensitivity. Bulletin 7200, W. & L. E. GURLEY, TROY, N. Y.

Axle units—A 4-page bulletin, No. 502, on RT-series tandem axle units has been released by Hendrickson Mfg. Co. These axle units are the standard for the 6-wheel truck industry, and are also used in trailer installations requiring articulation and equal load distribution. HENDRICKSON MFG. CO., LYONS, ILL.

Rock drills—A new 12-page bulletin describing Le Roi-Cleveland Rock drills illustrates a line of construction tools, breakers, sinkers, clay spades, tampers and wagon drills. Pages are devoted to tool design and construction, operator handling and care and maintenance features that lead to longer tool life. The lubrication system, drill and blow actions, and valve and piston design receive special attention. Le Roi also has a 6-pg description of one-use drill bits in Bulletin RD 29. LE ROI DIV., WESTINGHOUSE AIR BRAKE CO., MILWAUKEE 1, WIS.

Colors in face brick—A 32-page brochure contains over 100 illustrations of buildings with exteriors of Ava face brick. In addition there are full-color illustrations of eight different brick shades plus authentic reproductions of ten others. Those shown range from charcoal and rose-biege in the radiant-matt texture to reds, ivory and buffs in the vertical, smooth and bark-type textures. The booklet also contains information on bonds, mortars, brick research, interiors, fireplaces, as well as how bricks are packaged and palletized. THE STONE CREEK BRICK CO., STONE CREEK, OHIO, AND THE AVA BRICK CO., AVA, OHIO.

Money-saving way to REDUCE FACTORY NOISE LEVEL...



Typical Tectum Sidewall installation at Clark Equipment Co., Construction Machinery Div., Benton Harbor, Mich.

install TECTUM SIDEWALL INSULATION PANELS

THE EVER-INCREASING IMPORTANCE of sound control in industry makes Tectum, more than ever, the ideal material for factory sidewalls. In Tectum, the most desirable qualities of many materials are combined in one lightweight, easy-to-install sidewall plank.

Exceptionally high sound absorption characteristics frequently eliminate the need for additional, costly acoustical treatment. The felt back substantially reduces sound transmission as well.

But that's only part of the story . . . Tectum offers many other important advantages:

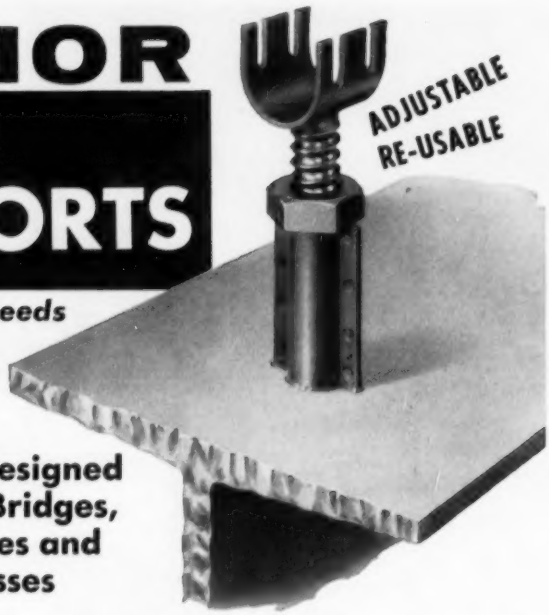
- *Superior insulating quality helps provide greater year 'round comfort . . . lowers heating and cooling costs.*
- *Rigidity and unusual structural strength makes possible the use of thinner, less expensive outer skin.*
- *Fire hazard is reduced . . . insurance rates are lower . . . because Tectum is rated noncombustible.*
- *Fast, simple erection holds labor costs to a minimum. When Tectum goes up, the job's done . . . its attractive off-white natural surface requires no paint, but can be painted without loss of acoustical value.*

Yes . . . Tectum not only offers many initial advantages, but continues to pay dividends in providing better working conditions with lower maintenance costs. Learn more about Tectum . . . write for Sidewall Insulation Panel Bulletin or see your nearby Tectum distributor. Tectum Division, Peoples Research and Manufacturing Company, 518 South Sixth Street, Newark, Ohio.

New SUPERIOR Heavy-Duty SCREED SUPPORTS

Pat. Applied For

For Use with 1¼" and 1½" I.D. Pipe Screeds and Vibratory Screeding Equipment



ADJUSTABLE SCREED HOLDER

Consists of a 1" threaded rod to which is welded a cradle to hold the pipe screed. This cradle is slotted as shown so that the arms may be bent over to secure the 1¼" or 1½" I.D. pipe screed. Threaded onto the rods is a half nut which provides the adjustment.

Especially Designed for Use on Bridges, Underpasses and Overpasses

These Screed Supports are designed to take the heavy loads imposed by traveling vibrating screeding equipment. The Bases for the screed holders are of two types: (1) The Metal Base for use on structural steel members; (2) the Chair-Type Base for use on a plywood deck.

On Structural Steel: As shown above, the Metal Base is tack-welded to the top flange on approximately four foot centers. The Screed Holder is set into the base, and adjusted to height by turning the nut. The threads are fast, three to the inch, and of a contour type, non-clogging and easily cleaned.

On Wood or Plywood Decks: The Chair Base is set on the deck at approximately four foot centers. It is easily secured to the deck by nailing across the upturned legs. If desired, legs can be supplied of galvanized wire. The Chair Base with holder is shown below.

PERFORMANCE

Superior's Heavy-Duty Adjustable Screed Supports have been used on turnpike structures and other projects. Results in the field indicate that this method of supporting screeds provides a simple answer to an otherwise expensive and complicated set up. *Write for Bulletin.*

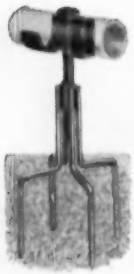
HOLDER INSERTED IN CHAIR BASE

Only the inexpensive bases are left in the concrete. The Adjustable Holders are easily removed, together with the pipe screed, because the holders are set, not screwed into the base. The nut fully covers the base opening and prevents concrete from entering.

Adjustable Standard SUPERIOR SCREED CHAIRS

FOR FORMED SLABS 4½" AND GREATER

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.



FOR SLABS ON FILL

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.

SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office
1775 Broadway, New York 19, N. Y.

Pacific Coast Plant
2100 Williams St., San Leandro, Calif.

Hamilton Wright Photo

Some 400 pieces of equipment moved up to 170,000 cu yd a day at . . .

Guarico Dam: Another Bustling And Dramatic Venezuelan Job

By moving as much as 170,000 cu yd of earth a day, the builders of Venezuela's 9-mi-long, 100-ft-high Guarico Dam completed the structure in time to capture this year's flood flows that began last month. Summer rains have now just about filled a 1.5 million acre-ft reservoir which will provide irrigation water for a 270,000-acre area in the heart of Venezuela's semi-arid central plains, 190 miles south of Caracas. Size of the reservoir is slightly greater than a normal year's flow in the Guarico River, 90% of which is accounted for in the short rainy season.

It wasn't until late in 1955 that major contracts were let—involving placement of 15 million cu yd of gravel and clay in the embankment and 130,000 cu yd of concrete in a 435-ft spillway. Since the Venezuelans wanted to gain a year's time in getting the project in operation, and had the money to pay for a lavish construction effort, they specified substantial completion by this August, which allowed the contractors only six months of high-gear operation.

And it was really high-gear construction. Government forces, a local contractor teamed with S. J. Groves of Minneapolis and no less than 400 pieces of heavy equipment combined to meet the challenge on the earthfill structure. Counting the equipment used by seven other contractors, there were 900 pieces of machinery on the job at one time early this year.

• **Traffic jams**—Not surprising, one of the biggest problems was to keep traffic moving on 22 miles of haul road on a round-the-clock basis. At night, portable electric semaphores were used at crossings and colored lights distinguished each type of vehicle. A carefully devised set of traffic rules kept dump trucks moving to the dam face at the rate of one every 45 seconds.

Guarico construction also featured probably the world's longest haul dis-

NINE-MILE-LONG earthfill dam, 100 ft high, had to be closed in six months. Rock to face upstream side was hauled 41 miles.

BUILD
BRIGHT COLORS
RIGHT INTO
CONCRETE
FLOORS...

And get greater hardness at low cost . . . easily!

TRUSCON
ART-ROC
AGGREGATE

Ready to use . . .
No pre-mixing with cement

Not a paint . . . ART-ROC troweled into the cement surface holds attractive colors safe from attack by cleansers, alkalis or rust. Provides a tough extra-hard surface at no extra cost . . . both for interior and exterior installations. Floors or pavements with ART-ROC are bright and attractive . . . easy to clean, economical to keep up.

Colors . . . Hardens . . . Beautifies . . . Dustproofs!

Just sprinkle on the leveled and floated fresh concrete surface, then work into the surface with a wood float and finish with a steel trowel. You'll be amazed at the brilliance and depth of the two beautiful colors: Tile Red and Spanish Green.

Remember . . . ART-ROC is not just a surface film, but color that's built-in to stay . . and it's so easy to use!

- Terraces
- Porches
- Walks
- Tennis Courts
- Salesrooms
- Recreation Rooms
- Restaurants
- Factories
- Swimming Pools
- Driveways
- Laundries
- Garages

TRUSCON
Laboratories
Division of Devoe & Raynolds Co., Inc.

Truscon Laboratories, Dept. E-33
Box 69, Milwaukee Junction P.O.
Detroit 11, Mich.

Please send me detailed information about ART-ROC.

NAME_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

tance—41 miles—over which 650,000 cu yd of rock for the upstream face of the earthfill had to be transported. Fortunately, the haul road is to become a main highway, leading to the town of Calabozo.

Guarico Dam is Latin America's largest in volume and length. Base width at the 100-ft-high portions is 655 ft. Irrigation water feeds into twin intake towers each connected to a 14-ft-dia steel-lined conduit that discharges into an 800-ft-long stilling basin on the downstream side of the dam. The basin will discharge 3,500 cfs into a 29-mi main irrigation canal, thence into 290 miles of feeder canal.

About 20% of the 270,000 acres to be irrigated will be devoted to farming, the remainder to cattle raising. The Ministry of Agriculture plans to resettle about 600 hand-picked families in the irrigated region.

• **Project costs**—The entire project, including the irrigation system, and agricultural aspects is expected to cost $75 million when complete eight years from now. Contracts for the dam itself totaled $19 million, but do not include preliminary work and one-third of the earthmoving which was performed by the construction agency, the Ministry of Public Works. Design of the project was handled by this Ministry, with R. J. Tipton Associated Engineers, Denver, Colo., serving as consultant.

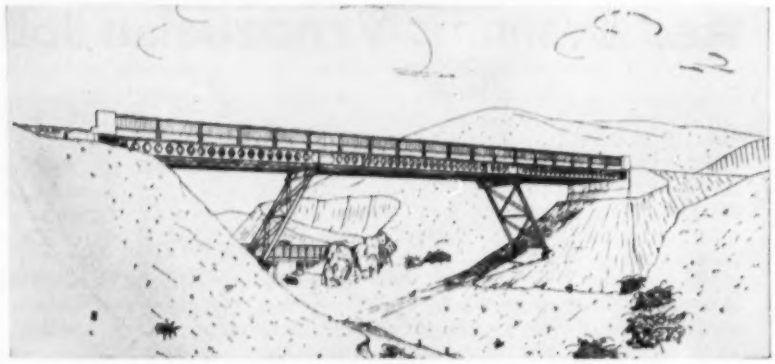
Principal contractors are Brillenbourg Villegas Asociados CA for the earthfill; Construcciones Industriales SA on the spillway excavation; Tecnica Constructora CA on spillway construction; and Ingenieros Scannone & Garcia Galindo SA for the intakes.

Guatemala President Speaks At Regional Road Conference

Principal speaker at a meeting of the International Road Federation at Guatemala City Nov. 26 will be President Castillo Armas, IRF has announced.

The conference, a regional meeting, is designed to bring together leaders of national roads associations, public works and highway administrators and highway engineers of Mexico, the Central American republics, the Caribbean area and Colombia.

Principal purpose is to focus new attention on the Pan American Highway.



New Zeal Marks New Zealand Bridges

With 38,000 lin ft of bridges presently on the Department of Works drawing boards, bridge building in New Zealand has become a rapidly expanding field. Emerging from the department are some interesting and unusual designs.

For instance, to avoid high piers for new three-span Mangaturanga Stream bridge (picture), engineers designed sloping supports that carry the structure at its third points. Founded in rock, the raking piers eliminate placing the supports in the stream bed. Novel steel girders with large hexagonal openings cut in their web serve as continuous stringers for the structure. Resting on the stringers is a concrete deck. The bridge is located on the Gisborne-Napier State Highway.

Another new crossing is the Patea River bridge, a seven-span continuous-girder structure 444 ft long. It is in reinforced concrete on a skew of 28 deg. Piers are carried on 50-ft piles.

Five welded-steel box girders, 3 ft 6 in. deep, comprise the main supporting members of the single-span George Street overpass at Dunedin—another of the new designs.

The Department of Works expects that the boom in bridges will continue over the next few years. To accelerate the program, the department is stockpiling standard bridge superstructures made to their own specifications.

Put BIG 25-yd. "B" on yardage jobs

If you want a dirtmoving machine that will haul bigger payloads, at higher average speeds, for lowest-net-cost-per-yard . . . check these Big B Tournapull advantages:

Greater capacity

18 cubic yards, struck, or 25 cubic yards, heaped, make the new "B" an outstanding machine for those big jobs. Designed especially for 25-yard capacity, it has speed, power, and stamina to out-produce any other rig on the market.

10-gear speed selection

Choice of 10 gears, plus clutch brake for fast shifting, means hauling at higher speeds . . . more trips per hour. Double-clutching and gear clash are eliminated. Low-gear speed range matches pushers, aids in loading. Wide range fits tough going, gives better grade-climbing ability.

Faster, easier loading

Stout, double-steel bottom, reinforced by welded-steel filler channels, takes strain and shock off fast loading with pushing tractors. Wide, shallow bowl allows easy entrance of dirt. New push-block provides direct line thrust to cutting edge. New scraper hoist-control gives fast pumping action in loose materials. New blade angle, improved weight distribution, and easy loading characteristics of the big B Tournapull speed up loading.

Power where it's needed

Tournapull's electrical control system puts the power right where it's needed, with minimum friction loss. Dependable motors are unaffected by weather conditions. Operation is by dashboard push-buttons . . . action is instantaneous. Maintenance is simple.

Shorter turns

Despite its size, "B" maneuvers in closer quarters than any other big, self-propelled scraper. This machine can turn around in a space only 35' wide. Machine is power steered . . . easy to handle anywhere . . . maneuvers safely in rough going, at high speed.

Less weather delay

Start work earlier . . . stop less often due to rain . . . add work-time at end of season with "B's" high tractive ability. Power-transfer differential transfers pull to wheel on firmest footing . . . "walks" "B" out of soft spots. Big, low-pressure tires give good traction in soft going. Rain and dust do not bother electrical system.

Faster, easier servicing

Accessibility is tops in the "B". New design makes every component easy to get at and service in the field. Fewer fittings and check points reduce lubrication time. Compare "B" with other big scraper units . . . note simplicity, accessibility, check service manuals and count and compare individual operating needs per month of operation.

Profit-making interchangeability

A 35-ton Rear Dump is available for use with the same "B" prime-mover. You can switch this 35-ton hauling unit anytime job conditions call for shovel or dragline loading. This way you get insurance of continuous earnings . . . double value from your investment.

Tournapull—Trademark Reg. U.S. Pat. Off. BP-955-Q-b

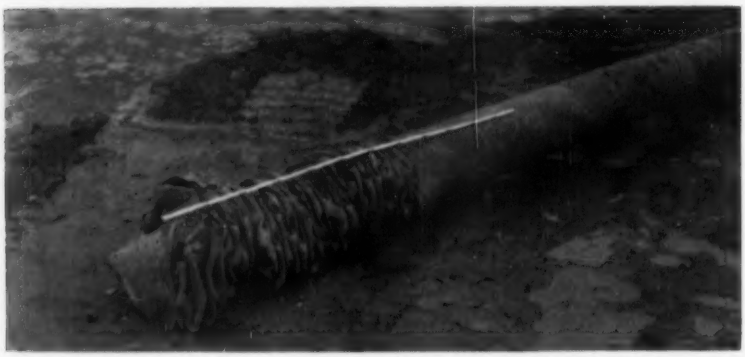
LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

SWAMPLAND SECTOR which will one day be a park presents fill, subsoil problems for builders of a NYC express route.

Mud Boils, Accordioned Piles Slow Road Job



24 FT OF PILE are in that four-foot accordioned section of hollow steel covered by the ruler above. Unexpected density of fill over swamp was cause.

MUD BOILS resulting from shear failure of surrounding land knocked piles out of line, filled excavation which was to have housed a storm-water culvert.

Building a new road over a swamp that will one day become a New York City park (ENR Nov. 3, 1955, p. 45) continues to pose peculiar problems for engineers and contractors.

Part of the now-building Long Island Thruway, the section involved includes bridging an area shown for many years on city maps as "Alley Pond Park" which is actually an almost sea-level depression amid the low rolling glacial-moraine hills that form much of the North Shore of Long Island. Once current road connections are finished, much of the swamp area will be dredged to form a scenic lake, and other areas will be filled to make the word "park" a reality.

One of the problems has to do with the fill itself—a fill that got so thoroughly compacted that hollow steel piles couldn't be pushed through it (engineers figured 100% compaction was achieved) until part of the fill was removed and steel angles welded to the sides of the piles; the other was a classic shear failure that held up construction of twin 6 ft by 6 ft culverts through the swamp itself.

• **Tough fill**—The fill itself—constructed by a mud-wave method—proved tougher than the most optimistic engineering estimate.

The problem originally was to get rid of thousands of yards of organic silt that formed the bottom of the swamp, without sheeting and excavating to good bottom. Solution, worked out by Brown & Blauvelt, con-

Grade roads

Build airports

Handle almost any job with "do-it-all D"

Dig drainage ditches

Backfill around buildings

Handle clean-up

Production dirtmoving

We haven't listed *all* the things D Tournapull can do. Frequently it does the work of several pieces of high-priced, specialized equipment. But, chances are you could find applications for the "D" we have never thought about.

That's one of the big advantages of this machine. It's highly versatile, changing at a moment's notice from one kind of work to another . . . running from one location to the next at speeds to 29.5 mph . . . speeding both big jobs and small.

"D" can work in tight quarters and around obstructions that seriously interfere with other types of equipment. Its capacity is larger than that of an average dump truck, yet it will load itself, spread with its dozer blade to eliminate need for tractor, and travel places where a truck cannot go. And, with its open top, it can be used as a hauling unit for loading by belt, elevator, shovel, hoe, dragline, or clamshell.

Not only will D Tournapull handle these and a great variety of other jobs, but it will handle them easier, faster and with less manpower and auxiliary equipment than any other dirtmoving rig.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-811-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA

See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

WELDED or RIVETED
STEEL
PLATE
FABRICATION

★ Boiler Casings
★ Boiler Breechings
★ Flues and Ducts
★ Condenser Shells
★ Condenser Piping
★ Heavy Turbine Housings
★ Fan and Blower Housings
★ Dust Collector Housings
★ Industrial Gas Mains
★ Expansion Joints
★ Hoppers and Bunkers
★ Tanks and Vats
★ Pressure Vessels
★ Wind Tunnels
★ Crane Bridge Girders
★ Trolley Frames and Trucks
★ Rigid Frames
★ Roll-Over Fixtures
★ Tank Turrets
★ Gun Mounts
★ Heavy Truck Bodies
★ Engine Frames and Bases
★ Crawler Frames
★ Press Platens and Beds
★ Press Columns
★ Heavy Machinery Parts and Assemblies
★ Gas Seal Hoods for Blast Furnaces
★ Furnace Roof Rings
★ Design Conversion of Castings to Weldments

MACHINING
★ Complete Machining Service—Facilities for Heavy Work of Unusual Dimensions

STRUCTURAL STEEL
★ For Buildings, Bridges and Special Purpose Structures
Drum Gates
Roller Gates
Taintor Gates
Taintor Valves
Protection Angles

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN
Branch Offices in New York and Chicago
MAHON

sulting engineers for the state of New York on the section, was to advance the more than 700,000 cu yd fill in a sharp knife-edge, squeezing the mud before it into waves that could be removed by dragline and clamshell.

The method worked well, aided by the movement of scrapers and trucks, and compaction by rubber-tired rollers. But when J. C. Moore, job superintendent for Tully & DiNapoli, contractors on the section, started to drive piles for a bridge abutment into the fill—he ran into the trouble shown in the accompanying photograph.

Final answer was removal of about 30 ft of the depth of the fill, then welding of three angle-irons onto the outside of the piles, to give them stiffness during driving. Even so, two of the pipe-piles called for in the design had to be eliminated, and steel beams driven instead.

• **Shear failure**—Meanwhile, Slattery Contracting Co., with a contract to pave the roadway in the area and do other work—including the twin culvert—ran into trouble. The culvert is to carry storm water into the proposed lake.

Following normal procedures, Slattery drove wood sheeting around the perimeter of the culvert area, and in it sank a number of wood piles to bearing at about 40 ft. The piles were to be cut off below ground level to form foundation for the culvert.

With the piles driven, Slattery started to excavate the gooey muck inside his wood sheeting—and the classic failure occurred. What happened was that clay-silt areas to the south of the excavation failed along a curved line, and the mass of material revolved under the 20-ft-deep sheeting, bubbling up inside the excavation.

After a delay in obtaining material —final solution was to drive steel sheeting to firm bearing, drive some new piles (to account for those knocked out of line by the failure) and finish the job.

By probing its depths . . .

Camera Extends Well Life

A camera that can explore the depths of costly irrigation wells and probe the gas-filled, malodorous reaches of sewer lines figures to save countless dollars in preventive maintenance and pinpointing actual damage.

The camera, invented by Claude Laval, Jr., of Fresno, Calif., now is the property of the Laval Underground Surveys, Inc., of Fresno, a wholly owned subsidiary of the Food Machinery & Chemical Corp. It was described in its well exploration use some years ago (AWWA Journal, May, 1951, p. 378), but the sewer inspection application is new.

To date the camera has been used mostly on the deep water wells of the San Joaquin Valley's west side where irrigation is dependent on well water. Charles H. Sortor, manager of the Laval survey firm, said the wells run from 1,200 to 3,200 ft in depth with most averaging from 1,500 to 1,800 ft. The cost of installing them is from $10 to $15 a foot. "This camera can quadruple the life of a well," Sorter declared. "Instead of abandoning a well which has become inoperative, the camera can locate the damage and repairs can be made."

The well camera is 6 in. in dia and 8 ft long. As it is lowered into the casing, photos are taken at 5-ft intervals. The negatives are numbered and keyed so that by looking at the negatives the precise depth at which a particular picture was taken can be determined.

After viewing the negatives (they give better detail than a print) through a three-dimensional viewer, trouble spots can be pinpointed and new pictures taken as close as 3 in. apart to investigate damage in detail.

As to its newer application, Donald E. Baird, Fresno city engineer, sees a great future for the camera in a field in which every city is interested —sewer maintenance. "Fresno has used it twice, once in a 54-in. main outfall sewer which for years the city had heard was caving in from the pressure of the 26-ft of earth under which it is buried," Baird said. "The pictures, however, showed the line to be in such satisfactory condition we estimate it has 35 to 50 more years of useful life."

To examine the line in the old way would have required considerable excavation work to uncover it. For a man to walk through the sewer, a possibility in the early morning when flow is lowest, would have required an oxygen supply and a variety of safety devices to avoid the dangers of explosive sewer gas.

Besides wells and sewers, Sortor

Plan your tractor work around the FOUR DIMENSIONS of tractor earthmoving

To get your share of future business, and profits, you need *power* . . . not only to "bull" out the heavy loads, but to move the largest loads possible, at the highest possible speeds.

You need *traction* . . . to take advantage of the available power. Traction to work on steep grades . . . traction to hang-on in slippery footing and loose materials to keep heavy loads moving.

You need *speed* . . . to keep pace with today's demand for faster job-completion . . . speed to move more dirt on longer hauls . . . speed for quick returns.

And, for today's larger and larger jobs, you need *mobility* . . . to handle scattered assignments in less time . . . to meet emergencies of job or weather . . . to step-up production on sections behind schedule . . . to move fast job-to-job, without need for special hauling equipment and extra men.

In order to fully capitalize on tomorrow's opportunities, your tractor fleet of today must qualify in all FOUR of today's tractor dimensions . . . power . . . traction . . . speed . . . and mobility. Your present heavy-duty track-type tractors have adequate power and traction. But most lack speed in their working ranges . . . none meet your important needs in the fourth dimension — mobility.

Tournatractor leads the comparative crawlers in power, and matches crawler pull in higher gears (over 2 mph), but has less traction for pull in lowest gear (under 2 mph). It matches crawler speed and traction in the work range, saves time and momentum with instant gear changes, has twice the travel speed, along with full mobility to move cross-country or via highway to the next work assignment. To make maximum profits in the expanding opportunities ahead, you NEED both the low-speed traction advantage of the crawler and the high-speed mobility of today's improved Tournatractor!

May we arrange a demonstration for you? Call or write today . . . no obligation.

▼ Figure percentage of your cycles where low-speed pull advantage is important. Then figure percentage where speed and mobility make money. On many of your operations you'll find, even in heavy digging, that a lighter loading cut combined with high-speed haul, return, and moving between assignments, pays off in production and profit. Time-study your tractors and see for yourself, but be sure to measure loading your blade or bowl in TIME, not distance!

Study these tables showing relationship of pull to speed:

	SPEEDS	
Machine*	**Forward**	**Reverse**
Tournatractor	17.4 mph	7.3 mph
Cat D8	7.4 mph	7.4 mph
IH TD24	7.6 mph	6.6 mph
AC HD21	7.5 mph	5.5 mph

	POUNDS-PULL			
Machine*	1.5 mph	2.0 mph	2.5 mph	3.0 mph
Tournatractor	24,700	23,500	18,800	15,650
Cat D8	30,000	24,000	18,000	15,000
IH TD24	32,500	22,500	18,000	15,000
AC HD21	Pounds-pull curve not shown in manufacturer's literature available to us.			

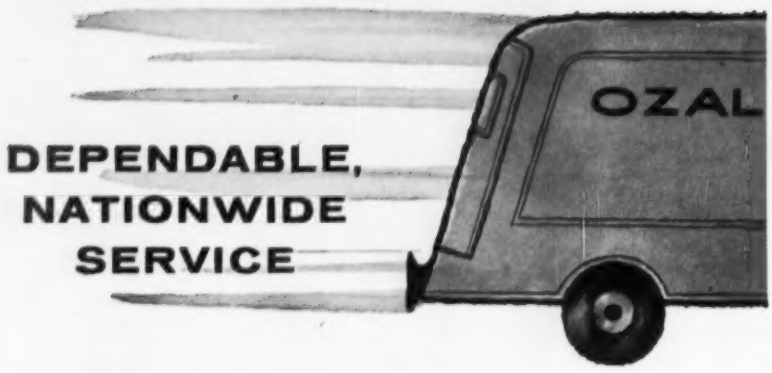
Note: Figures taken from manufacturers' specification sheets available to us at time of printing.
*All machines torque converter equipped. Tournatractor—Trademark Reg. U.S. Pat. Off. CT-1149-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

OZALID®
First Name in Whiteprinting



DEPENDABLE, NATIONWIDE SERVICE

keeps your
Ozalid whiteprinter on the job years longer

You're assured *many more years* of continuous, trouble-free printmaking in *two important ways*—when you buy an Ozalid whiteprinter.

First: the model you choose is the finest performer in its class—rugged in design, reliable in operation.

Second: *when* and *if* maintenance is needed, Ozalid is nearby—ready, willing and *able* to get things going again, on the double.

More than 250 factory-trained service experts across the country keep your Ozalid machine in top trim. Their "preventive maintenance" program—including inspection, cleaning, lubrication—avoids service calls and jam-ups for you.

Ask your nearest Ozalid distributor about maintenance—and about the latest model Ozalid whiteprint machines. See his number in the phone book or write to:

OZALID®
DIRECT COPY SYSTEMS

Department N-9, Johnson City, N.Y.

A Division of General Aniline & Film Corporation
In Canada: Hughes Owens Company, Ltd., Montreal

LOOK FOR IT!

NEW "STREAMLINER 400"

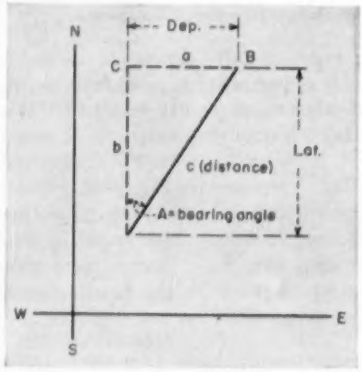
says the camera can be used in mine shafts and blast holes, in the latter case to locate the most advantageous spot to place a charge. (In this regard, it is not to be confused with the bore-hole camera, which was used to take 360-deg pictures in 3-in. holes drilled in the rock at Folsom Dam (ENR June 25, 1953, p. 39).

Plexiglas Glazing on Rigs Halts Window Breakage

A number of contractors building a distribution depot for the Pennsylvania State Liquor Commission at Kingston, Pa. have eliminated an expensive window breakage problem in their heavy earthmoving and construction equipment by substituting panes of Plexiglas plastic for conventional safety glass.

According to the Plastics Arts Co. of Wilkes Barre, Pa., rough service, stones, carelessly handled tools and door slamming were taking a heavy toll of glass windows, windshields and enclosures on drag lines, shovels, dozers and scrapers. In some cases, windows were replaced as often as once a week.

As a remedy, original glazing was replaced as it was broken with ¼-in. thick panes of Plexiglas, the largest panel installed to date being 32 x 61 in. According to the manufacturer, replacement program started in the fall of 1955 and as of this date not a single case of breakage has been reported. ROHM & HAAS CO., PHILADELPHIA, PA.



Quick Check for Coordinates

Here is a useful formula, which can be called the "45-deg check". It enables the computer to check coordinates quickly.

$$c \times \cos (A - 45) = \frac{1}{\sqrt{2}} (b + a)$$

E. D. JONES, NEW ENGLAND SURVEY SERVICE, INC., WEST HARTFORD, CONN.

Check these Elegrader features

Troughing belt — 30% more carrying capacity than flat belt; makes steep-angle operation practical.

Hinged conveyor — power-operated folding conveyor; travels safely at traffic speed from job-to-job.

Extended lip and rock-guard — deflects foreign objects from striking belt and conveyor, prevents disc from cutting belt.

Extra-heavy plow-beam — sturdy, stable mount for disc-plow; balances carrier for smooth, easy operation.

Sealed bearings on conveyor-rollers — make lubrication unnecessary for life of bearings.

Belt guide-rollers — center conveyor-belt, reduce wear, cut power-loss, reduce belt-maintenance.

Practical sizes — Available for use on Adams grader models 660, 610, 550, and Cat model 12. Carrier length: 16', 19', 22', 27'. Belt width: 42".

Loads truck every 45 seconds... 700 yards per hour

Fast, clean handling of dirt makes every yard cost less. With a fast-loading Elegrader mounted on your larger size Adams grader, you can cut earthmoving costs on jobs where large volume loading, casting, or ditching is required.

Makes your grader a loader

Elegrader cuts ditches and casts plowed material up on the road-bed, into trucks, or over the side bank. It loads fill, strips topsoil, works effectively in clay, loam, sand, gravel, or muck. A heavy-gauge disc-plow is mounted on sturdy plow-beam attached at front of grader. Plow is raised or lowered by power controls from operator's cab . . . digs to 30" depth.

Loads or casts

Excavated material flows from disc-plow onto a trough-belt conveyor . . . travels up and off conveyor at speed of 450' per minute. You can load up to 700 cubic yards per hour, depending on soil-conditions. 5-yard trucks can be loaded in 30 seconds with a 45-second loading-cycle. When loading a fleet of trucks, the conveyor height is adjusted to load the highest truck, and need not be changed for others.

For jobs such as building up a road grade, or wasting dirt to the side, Elegrader overcasts up to 1500 cu. yards per hour.

26 mph mobility

Your Elegrader, mounted on an Adams grader moves job-to-job at speeds to 26 mph. Conveyors 16', 19' or 22' long are power folded and carried on grader when traveling . . . 27' conveyor is towed behind grader on its own rubber-tired wheels.

Make cheap dirt pay

Get the facts on Elegrader for fast, clean, big-volume dirt-handling. Find out how a small investment can pay you big dividends. For complete information, just telephone us or drop us a line.

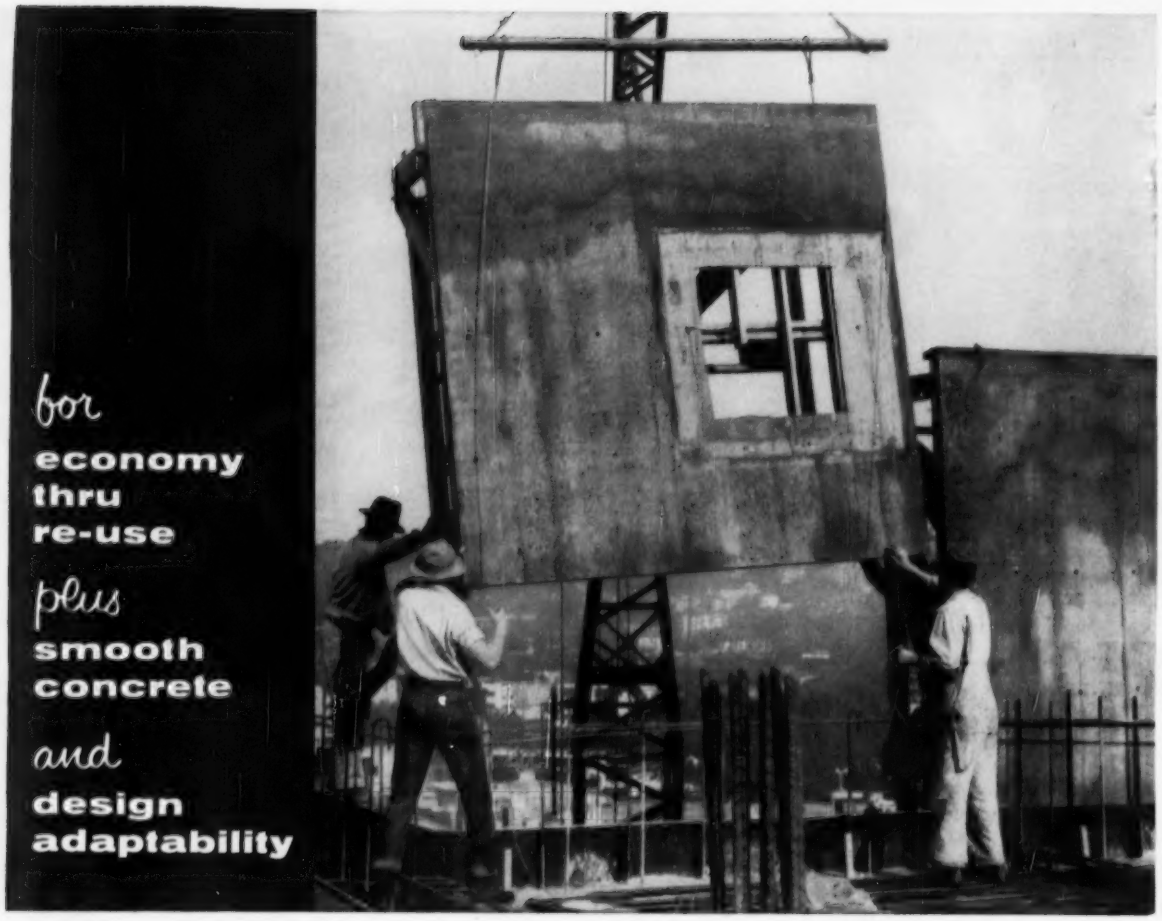
This Elegrader, mounted on Adams 660, cast 1000 yards an hour, rebuilt average of 1 mile of road per 14 hours.

Stripping 18" deep at 2¼ mph, this Elegrader loaded trucks in 30 seconds, averaged 600 yards per hour. AE-37-H-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957



...no other form material compares with

Fir Plywood

FIR PLYWOOD's unique combination of advantages makes it the standout choice for *any* form job. *Re-use important?*...fir plywood gives up to 200* pours per panel. *Appearance count?*...specify fir plywood for smooth, monolithic surfaces. *Tricky forming problem?*...fir plywood easily forms curves, angles, decorative effects. *Costs critical?*...in addition to its low-cost-per-use, fir plywood cuts application time and costs by up to 20 per cent.

FOR YOUR FILES: *New PlyForm Catalog. Contains detailed specification, application, design data. Write (USA Only) Douglas Fir Plywood Association, Tacoma 2, Washington.*

always specify by DFPA grademark

PLYFORM EXT-DFPA PLYFORM EXT-DFPA

INTERIOR PLYFORM®—standard concrete form grade made with moisture-resistant glue. Gives up to 10 re-uses.

EXTERIOR PLYFORM®—standard form grade made with waterproof glue. Can be re-used as many as 25 times.

***OVERLAID FIR PLYWOOD**—special panel with hard, glossy fused resin-fiber surfaces. Waterproof glue. Gives up to 200 re-uses.

Measure of Damages In Contract Refusal

When a successful bidder refuses to go ahead with a contract, the extent of his liability may depend upon the conditions under which the bid was submitted.

The following is a case in point:

The government advertised for bids on surplus material. The invitation for bids required each bidder to deposit a specified amount with the government agency, one of the conditions being that a withddrawal of a bid would forfeit the deposit. In addition, the government stipulated that, if the person to whom the contract was awarded refused to go ahead with the purchase, it could:

1. Terminate the contract.
2. Sell the material to another party.
3. Charge the party who refused to enter into the contract of purchase with any damages the government might sustain.

When the case went to court, after the successful bidder refused to buy the material, the court ruled that the government could not only retain the security deposit but could also recover the full loss it sustained by selling the material to someone else at a lower price.[1]

[1] United States v. P. J. O'Donnell & Sons, 228 F. 2d 162, U. S. Court of Apeals, Dec. 13, 1955.

No Claims Can Be Filed After Giving a Release

A subcontractor who gives a general release to the prime contractor can't later turn around and sue for more money.

In one case, for example, a sub had done the clearing and grubbing on a state thruway. After the work was done, the prime contractor paid the contract price and the sub gave him a general release.

Later, the sub sued for additional compensation. He claimed that during the progress of the work he had asked the prime contractor for more money because the job would bankrupt him without it. The prime contractor, he said, had agreed to pay him as extra compensation whatever he lost on the job, if the sub would go ahead and complete it.

The sub's claim for additional compensation was dismissed by the court[1] for the following reasons:

1. There was no consideration to support the promise to pay the subcontractor more than the amount called for by the contract.

2. The subcontractor had no claim against the prime contractor because he had already released him "from any and all obligations to me on account of clearing and grubbing operations performed by me."

[1] Buker v. Mt. Vernon Contracting Corp., 146 N. Y. S. 2d 879, N. Y. Supreme Court, Appellate Division, Dec. 23, 1955.

Determination of Engineer Final in Absence of Fraud

If a contract makes required determinations of the engineer final and conclusive, the contractor is bound by the actions of the engineer, unless he can show fraud in its broadest sense.

Here is a situation where a contractor was blocked by the engineer in getting his payments:

Under a construction contract the engineer was required to make all necessary explanations as to the meaning and intent of the specifications and drawings, to give all orders and directions contemplated by the contract, and to determine the amount, quality, acceptability and fitness of the work and materials to be paid for under the contract. The contract also provided that the engineer would determine all questions in relation to the work and would decide every question which might arise relative to the fulfillment of the contract on the part of the contractor. The engineer's decision and estimate was made a condition precedent to the right of the contractor to receive any money for work done under the contract.

The contractor brought an action to recover a sum that he claimed was due him for work done under the contract, claiming that the engineer had fraudulently refused to include payment for such work in his estimate and certificate of payment. The contractor obtained a judgment at the trial but this was reversed on appeal,[1] the appellate court holding that the evidence produced at the trial did not show any fraud on the part of the engineer in refusing to certify payment for the work in question and directed a new trial.

The appellate court pointed out that it has become common practice to include such provisions in construction contracts and stated: "Fraud in this connection has a broader connotation than is ordinarily implied. In addition to its ordinary significance,

WILD
HEERBRUGG

WILD T-2 UNIVERSAL THEODOLITE

From any point of view . . . here is the WILD instrument for precision, speed, convenience, versatility and ease of operation!

- READING ON BOTH CIRCLES DIRECT TO 1 SECOND
- RAPID OPTICAL PLUMMET CENTERING
- LARGE FATIGUE-FREE FIELD OF VIEW
- COMPLETE RANGE OF ACCESSORIES

Write for booklet . . . and use the Wild Heerbrugg advisory services without obligation.

WILD HEERBRUGG INSTRUMENTS, Inc.
Main at Covert St. • Port Washington N. Y. • Port Washington 7-4643
SALES • FULL FACTORY SERVICES

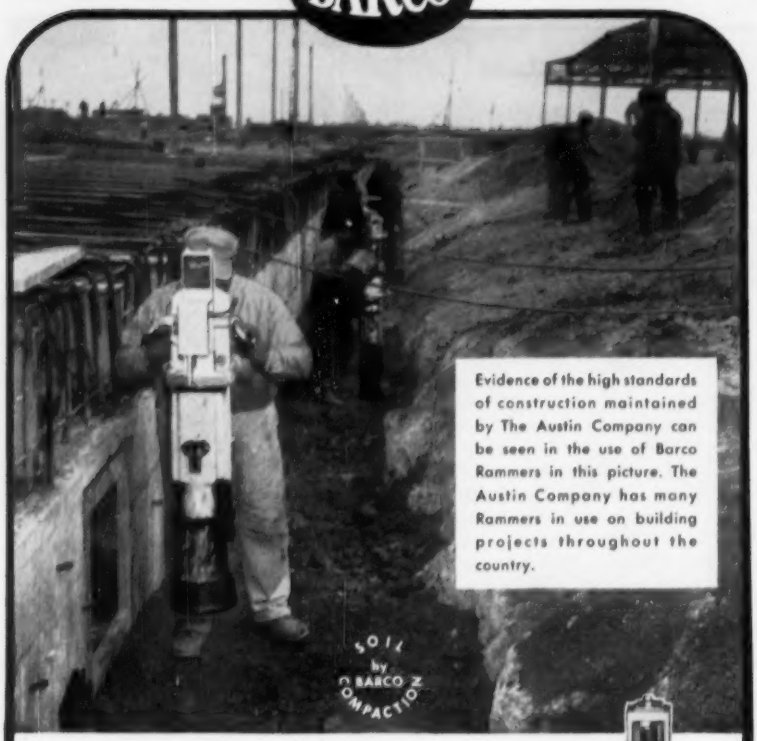
WACO ALUMINUM
GRATING WALKWAYS
& HANDRAILING

High strength, non-corrosive, WACO walkways and handrailing provide complete non-skid, non-sparking safety. Designed and custom fabricated to your special requirements. Write Dept. 4-W for additional information.

WASHINGTON ALUMINUM
Company, Incorporated
Baltimore 27, Maryland
phone: Arbutus 2700

New York Office—MU. 7-0926

GASOLINE BARCO RAMMER

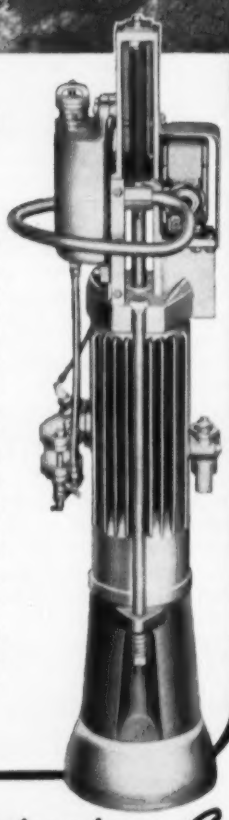


Evidence of the high standards of construction maintained by The Austin Company can be seen in the use of Barco Rammers in this picture. The Austin Company has many Rammers in use on building projects throughout the country.

Barco Performance Pays Dividends!

Job Finished on Time!—When project specifications call for SOIL COMPACTION, Barco performance can't be beat! In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—RAPIDLY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Atomic Energy, Air Bases, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Bridges, Buildings, and Housing Developments. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour.

Ask for a Demonstration—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 514-K.



BARCO *Manufacturing Co.*

514K Hough St. Barrington, Illinois

in construction contracts it includes arbitrary and gross mistake, 9 Am. Jur., Building and Construction Contracts, Section 34, Restatement of Law, Contracts, Section 303. Where such ground is not established, failure to obtain the engineer's certificate or a favorable decision from him precludes a recovery. However, when fraud is proved, the legal significance thereof is that the necessity for favorable action of the engineer is eliminated as a condition precedent to the maintenance of the suit, but the contractor still has the burden of demonstrating the breach of the contract and his right of recovery."

The court also pointed out that under such a contract provision, the engineer should act judicially and not in an arbitrary manner.

(1) Terminal Const. Corp. v. Bergen County Hackensack River Sanitary Sewer District Authority, 112 A. 2d 762.

Several Rules of Law On Contract Interpretation

In the construction of a written contract, words that are plain and free from ambiguity must be construed in their usual and ordinary sense. The law will not imply a contract as to a matter that is covered by the existing written contract.[1]

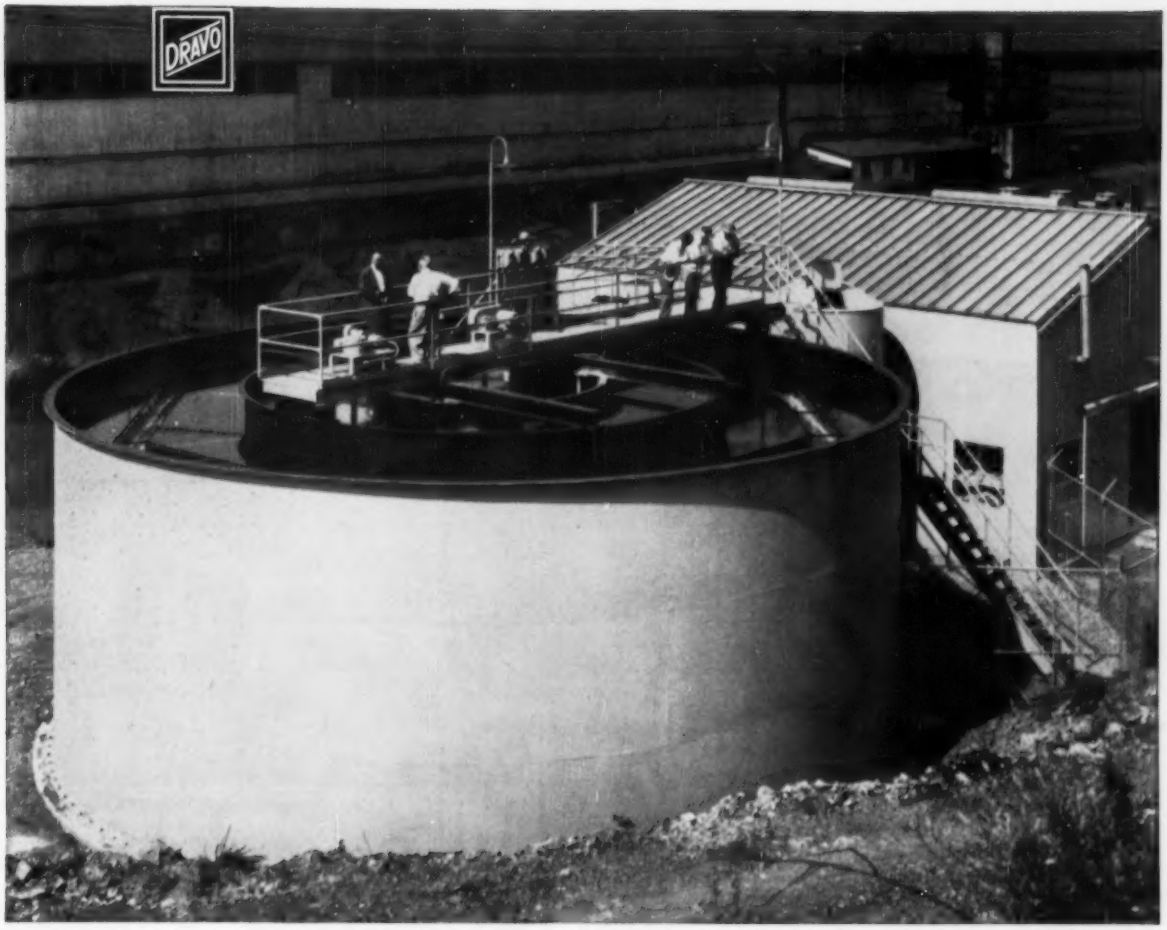
In construing a contract, a court should place itself in the position of the parties at the time the contract was entered into and should consider all the facts and circumstances existing at that time in order to determine the meaning of the words and phrases used in the contract.[2]

Where the language of a contract is ambiguous, the construction given it by the parties by their conduct at the time the dispute arose will be adopted by the court if litigaion arises concerning it if such construction is not unreasonable.[3]

Courts, in construing contracts, will not make a better or different contract than the parties themselves have seen fit to enter into nor will it permit evidence of an oral understanding or conversation had prior to the execution of the written agreement, because all such oral agreements have been superseded by and have been merged in when the written agreement was drawn up.

[1] Zarum v. Brass Mill Materials Corp., 134 N. E. 2d 141.
[2] West v. Ankney, 134 N. E. 2d 185.
[3] Totsch v. Johnson, 134 N. E. 2d 352.
[4] Jones v. Crawford, 148 N. Y. S. 2d 335.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)



Ironing out a steel company's raw water problem

Universal Cyclops Steel Company at Bridgeville, Pa., was using a million gallons of raw water per day. Iron compounds clogged the piping and caused high replacement expense. Besides, more water capacity was urgently needed. After a survey, Dravo was selected to erect new water treatment facilities.

The new plant has twice the capacity of the old. Mineral content of water is controlled effectively, eliminating frequent piping replacement. The project includes building and foundations, chemical feeders, clear water reservoir, De Laval pumps and a 1500-gallon per minute Walker Process clarification unit.

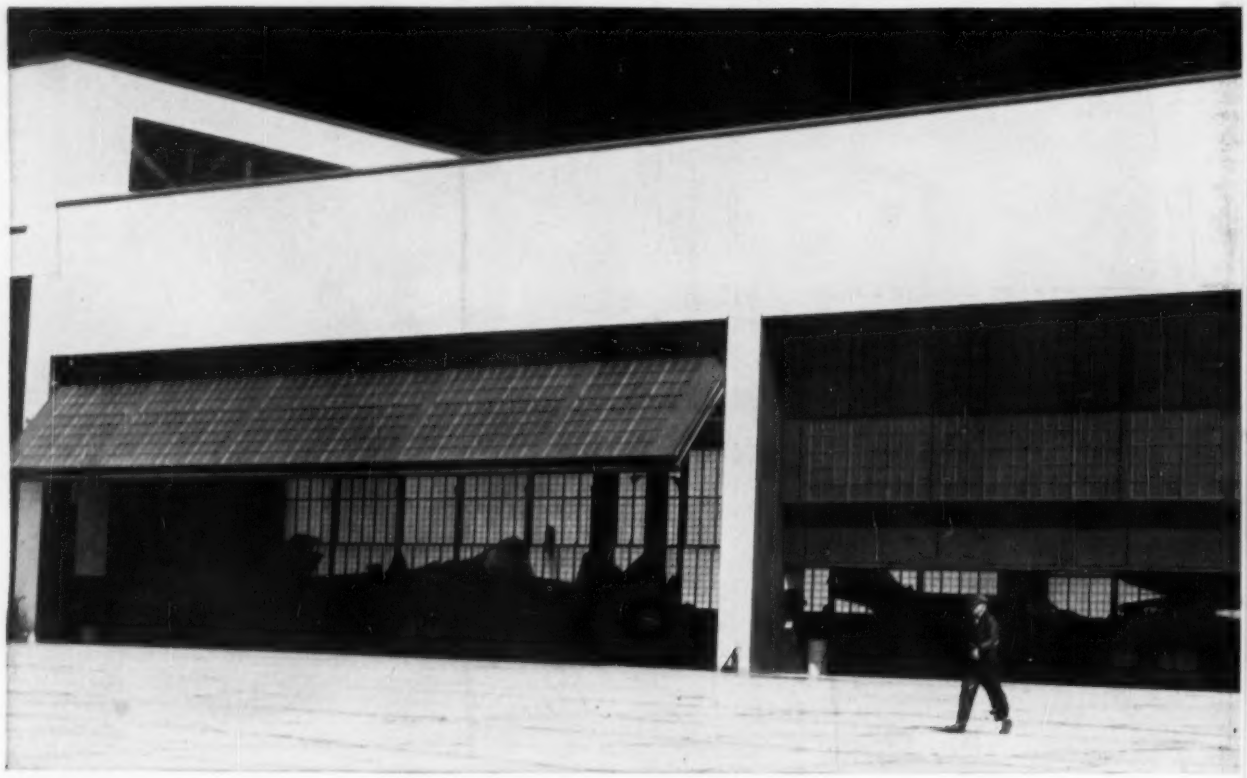
This is typical of the varied construction assignments performed by Dravo . . . many on a single contract or "turn-key" basis. For information on such problems or the other Dravo products and services listed below, write DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

DRAVO
CORPORATION

Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping

foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation



TRUSCON Vertical Lift Canopy Doors pass all tests for flight test hangar

Quick opening and closing . . . space-saving . . . weather protection . . . resistance to wind load . . . long, dependable operation . . . these are features you demand in hangar doors. Truscon® Steel Doors meet all demands, pass every test.

Vertical Lift Types like these are the most exacting of all big doors. They must be beautifully balanced, skillfully engineered, precisely fitted, imaginatively designed, carefully fabricated and properly installed. In short, they must be the product of big door experience.

Truscon offers you the benefit of just such experience. Thirty years of it. Building and installing the biggest doors of all types.

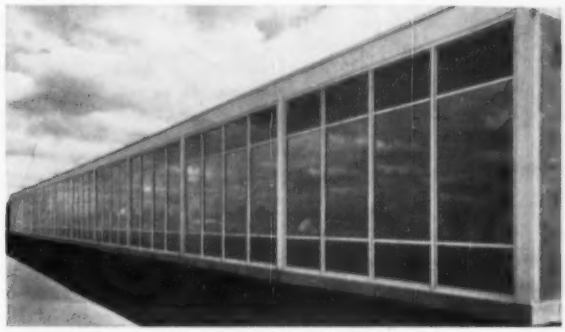
Talk to Truscon—the big name in big doors—about your next hangar job. Truscon builds a variety of proven types fitted to all airport service and climate conditions. Designs include Straight Slide Doors, Tail Doors, Braced and Unbraced Canopy Doors, Vertical Lift Canopy Doors. Truscon door engineers and field crews will help you best apply the proper design and type to your specific needs. Send coupon for catalog to aid in your preliminary planning.

REPUBLIC

REPUBLIC STEEL

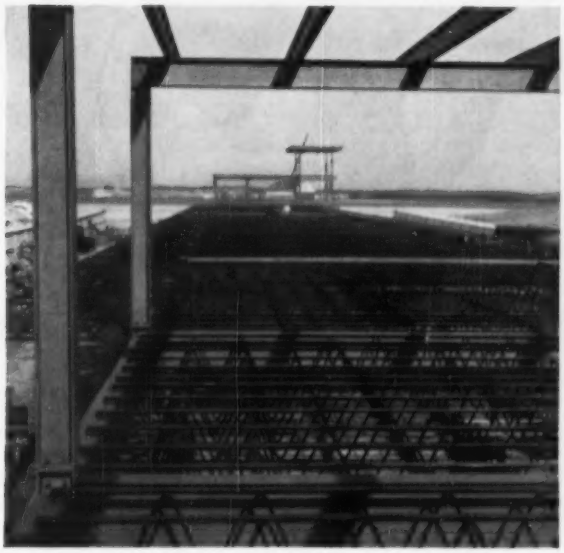
World's Widest Range of Standard Steels

Flight Test Hangar, McDonnell Aircraft Corp.
Lambert Field, Robertson, Mo.
Sverdrup-Parcel, Inc., architects.
G. L. Tarlton Contracting Co., contractors.



VISION-VENT® IS A WALL WITH A WINDOW. It's Truscon's wall panel that incorporates all the mass-production and installation economies of standard steel windows. Each unit is complete, ready for immediate erection. Designed to enclose entire wall surfaces, Vision-Vent is ideal for airport administration and service buildings. Send coupon for bulletin.

WEDGE-LOCK STEEL SHELVING keeps flagship parts "On Deck" for American Airlines. (Wood inserts are used here to absorb oil and grease.) The heavier the load, the tighter the joint. That's Wedge-Lock Steel Shelving, manufactured by Republic's Berger Division. Shelves and bins are clear and open. Its great strength supports heaviest loads without sagging . . . resists overloading damage . . . permits space-saving high stacking. Investigate WEDGE-LOCK — no stronger shelving is made. Send coupon.



AVIATION'S NEWEST SHOWPLACE built with Truscon "O-T"® Steel Joists. This is the West Concourse of Hopkins Airport, Cleveland, Ohio, with "O-T" Joists placed in position. Truscon Steel Joist floor and roof construction is strong, lightweight, fire-resistant. Erection is fast. A new Truscon Clerespan® Steel Joist provides an unobstructed span up to 96 feet wide. Ideal for hangars. Send coupon.

STEEL

and Steel Products

REPUBLIC STEEL CORPORATION
Dept. C-2151
3114 East 45th Street, Cleveland 27, Ohio

Without obligation, please send further details on:

☐ Truscon Hangar Doors ☐ Vision-Vent Window Walls
☐ Wedge-Lock Steel Shelving ☐ Truscon Steel Joists

Name_____ Title_____

Firm_____

Address_____

City_____ Zone____ State_____

DON'T COMPROMISE ON DESIGN FREEDOM!

Now, your equipment can be lighter, stronger, tougher—made with economical new Lukens "T-1" steel!

■ The unique qualities of this amazing new material offer you greater design freedom than ever before in a high-strength steel! It has unusual resistance to impact, abrasion and atmospheric corrosion. It's tough and *stays* tough at low temperatures. And it combines these qualities with *triple* the yield strength of ordinary carbon steel! These advantages are changing the design of equipment and machinery in a growing number of industries.

Users like new Lukens "T-1" steel because its strength and toughness mean lighter, more efficient equipment. Because such equipment lasts longer, delivers better overall performance. Because it means lower maintenance and replacement costs.

No wonder this remarkable steel is finding its way into so many new plans. And Lukens "T-1" steel can be had in the widest range of plate sizes available anywhere!

Whether you want specific product information or the best ways to make the most of it, write for 24-page illustrated booklet, **LUKENS "T-1" STEEL**, to Manager, Marketing Service, 848 Lukens Steel Company, Coatesville, Pennsylvania.

Whatever your plans—now's the time to change to . . .

LUKENS "T-1" STEEL

LUKENS

THE NEWEST IN A COMPLETE LINE OF ALLOY STEELS
LUKENS STEEL COMPANY, COATESVILLE, PENNSYLVANIA

Men and Jobs

Col. W. W. Lapsley to Head Engineer Maintenance Center

Col. William W. Lapsley, chief of the Supply and Maintenance Division, Headquarters Army Forces Far East, will assume command of the Engineer Maintenance Center, Columbus, Ohio, Oct. 15. The change, announced by Maj. Gen. Charles G. Holle, Acting Chief of Engineers, will fill a vacancy left when Brig. Gen. Miles M. Dawson retired last spring.

Colonel Lapsley was commissioned in the Corps of Engineers in 1935 upon his graduation from the U. S. Military Academy at West Point. He received an MS degree in civil engineering from the University of California in 1937, and later studied at the Armed Forces Staff College, Norfolk, and the Engineer School, Ft. Belvoir, Va. From engineering work with the Corps in this country, he went overseas during the war years and served as commanding officer of the 41st Engineer Regiment in the Mediterranean and European Theaters of Operation. Prior to his present post, Colonel Lapsley was chief of the Supply Division, Engineer Section, in the Far East.

Designer of First Ski Lift Retires From U. S. Steel

Gordon H. Bannerman, designer of the first ski-chair lift and authority on the design and erection of aerial tramways, retires this month from U. S. Steel Corp. Residing in San Mateo, Calif., he has been manager of tramway sales for U. S. Steel's Columbia-Geneva division.

G. H. Bannerman

Bannerman started his career with the company in a drafting room of the American Steel & Wire Co. at Trenton, N. J. His original ski project was for the Union Pacific Railroad at Sun Valley, Idaho, 20 years ago. Since that time he has worked on more than 200 tramway projects, designing and supervising their construction in U. S. and Canada.

Gregg Leaves Louisville City Construction Agency

George R. Gregg has retired as general superintendent for construction and maintenance for the Metropolitan Sewer District of Louisville, Ky. He had been in the post for 21 years and in construction for some 50 years.

The Beargrass Creek interceptor sewer in Louisville is among the recent projects he has directed. He is also known for his part in construction of the 351-ft concrete monument to Jefferson Davis in Fairview, Ky., over the years 1917 to 1924.

Men and Job Briefs . . .

• **Associations**—The Portland Cement Association appoints **William J. Moore** as district field engineer at the newly opened office in Baltimore, Md.

• **Corps of Engineers**—Lt. Col. **Joseph F. Garbacz** is named executive officer at the Corps' Portland, Oregon, District. He replaces the post left vacant by Lt. Col. **Francis B. McBride** who was assigned as assistant district engineer at Portland.

• **Careers**—The Wyoming State Public Health Dept. hires **David P. Green,** former Brownsville, Tex., consulting engineer for the division of environmental sanitation. . . . The Idaho State Highway Department names **G. Bryce Bennett** as state highway engineer, replacing **E. V. Miller** who resigned.

• **Business**—The Dravo Corporation of Pittsburgh, Pa. appoints **William C. Stratton** as chief engineer of the engineering and construction division . . . **Louis S. Forman** opens his own consulting engineering office in Lancaster, Pa., following his retirement as chief of the structural department in the architectural-engineering firm of J. Gordon Turnbull, Cleveland, Ohio.

Save time and money on construction jobs

The reference aid that helps you solve your toughest construction problems

With the construction work that lies ahead for every engineer, it is only up to you to assure yourself of superior workmanship — assure your work of the finest structural qualities — by providing yourself with this revision of the famous Hool and Kinne Library — the books which for years have been providing structural engineers with the facts they need on every problem concerned with the design and construction of civil engineering structures.

HOOL AND KINNE'S

Structural Engineers' Handbook Library

Revised by R. R. ZIPPRODT,

And prepared by a staff of sixty-three well-known engineers, each a specialist in his field.

6 volumes; 3763 pages; 2719 illustrations; 63 contributors

Each one of these six volumes is a complete reference in itself on some aspect of structural engineering. The library

▶**COVERS** the how and why of foundation and substructure design and construction, the general theory of structural members, the detailed design of such members, and the design of their connection with other members.

▶**EXPLAINS** the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portable bracing.

▶**GIVES** details of design and construction of steel, timber, and concrete structures of all types.

EXAMINE IT FREE!

We invite you to inspect these books for yourself, because we know that that is the one way you can realize their true value to you, and to the jobs that you do. You want to back up your own knowledge with sure, easy-to-get facts, and you want to make your workmanship worthy of your best time and effort. Therefore, the best investment you can make is to add to your own experience the tested working aids given in this dependable reference library.

SAVE $7.50 the difference between the special library price and the cost of the same books bought separately.

EASY TERMS—SEND COUPON

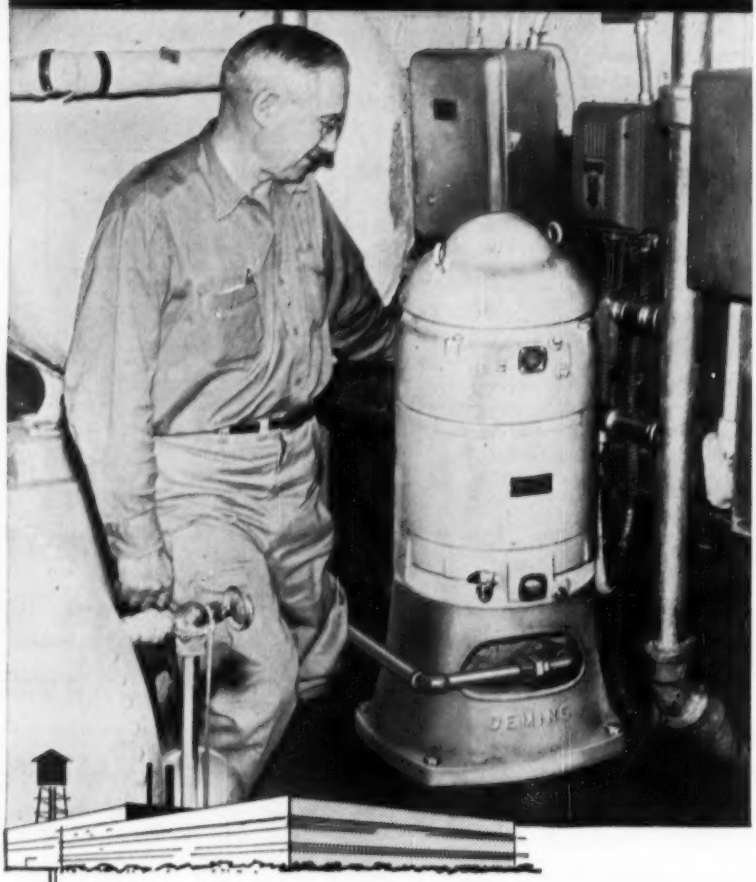
McGraw-Hill Book Co., Inc. Dept. NR-9-27
327 W. 41 St., N. Y. 36

Send me Hool and Kinne's STRUCTURAL ENGINEERS' HANDBOOK LIBRARY, 6 volumes, for 10 days' examination on approval. If the books prove satisfactory, I will remit $7.50 in 10 days, and $6.00 monthly until $43.50 is paid. Otherwise I will return books postpaid.

(PRINT)
Name .....
Address .....
City .....Zone....State.....
Company .....
Position .....

For price and terms outside U. S. Write McGraw-Hill Int'l., N. Y. C. NR-9-27

DEMING
TURBINE PUMPS



They Tap a "Gold Mine" Right Under a Plant!

Looking for ways to reduce costs? Don't overlook WATER COSTS! Your company may own a "gold mine" of underground water. Why not use it to reduce WATER COSTS!

Delivering water from deep wells, lakes or streams for factory water supply is one of the biggest uses of DEMING TURBINE PUMPS. *In many cases, these dependable pumping units have cut water costs in half.*

Ask us for free, illustrated Bulletin No. 6700 and the names of Deming Distributors in your area.

THE DEMING COMPANY
536 Broadway • Salem, Ohio

Books

Engineering Encyclopedia

Publication—in about three years—of of the first comprehensive, multivolume encyclopedia devoted exclusively to science and technology has been announced by the McGraw-Hill Book Co. To be known as the "McGraw-Hill Encyclopedia of Science and Technology," it will total some 7,000 oversize pages, and will probably be bound in ten volumes.

The encyclopedia will be made up of several thousand articles written by acknowledged authorities on the various subjects. It is designed to serve as a complete reference work for the student, teacher, engineer, scientist and others seeking information on scientific and engineering matters. Readability and comprehension will be at the college upper-classman level.

Initial publication of the encyclopedia will be followed by annual yearbooks and, periodically, by complete revisions of the books themselves to keep the encyclopedia owners abreast of new developments as they occur.

McGraw-Hill has established an editorial office at Charlotesville, Va., to house the staff preparing the encyclopedia and to provide convenient research facilities at the near-by campus of the University of Virginia.

Basic to Engineering

ENGINEERING MECHANICS—By S. Timoshenko and D. H. Young. Fourth Edition, 534 pp., McGraw-Hill Book Co., Inc., New York, N. Y. $7.50

Like earlier editions, this book remains designed primarily for undergraduate courses in engineering. The contents of the edition (also available in two volumes) somewhat exceed that which can generally be covered in two courses of 3 semester hours each, but the extra chapters can easily be omitted, if there is not time, without harming the course.

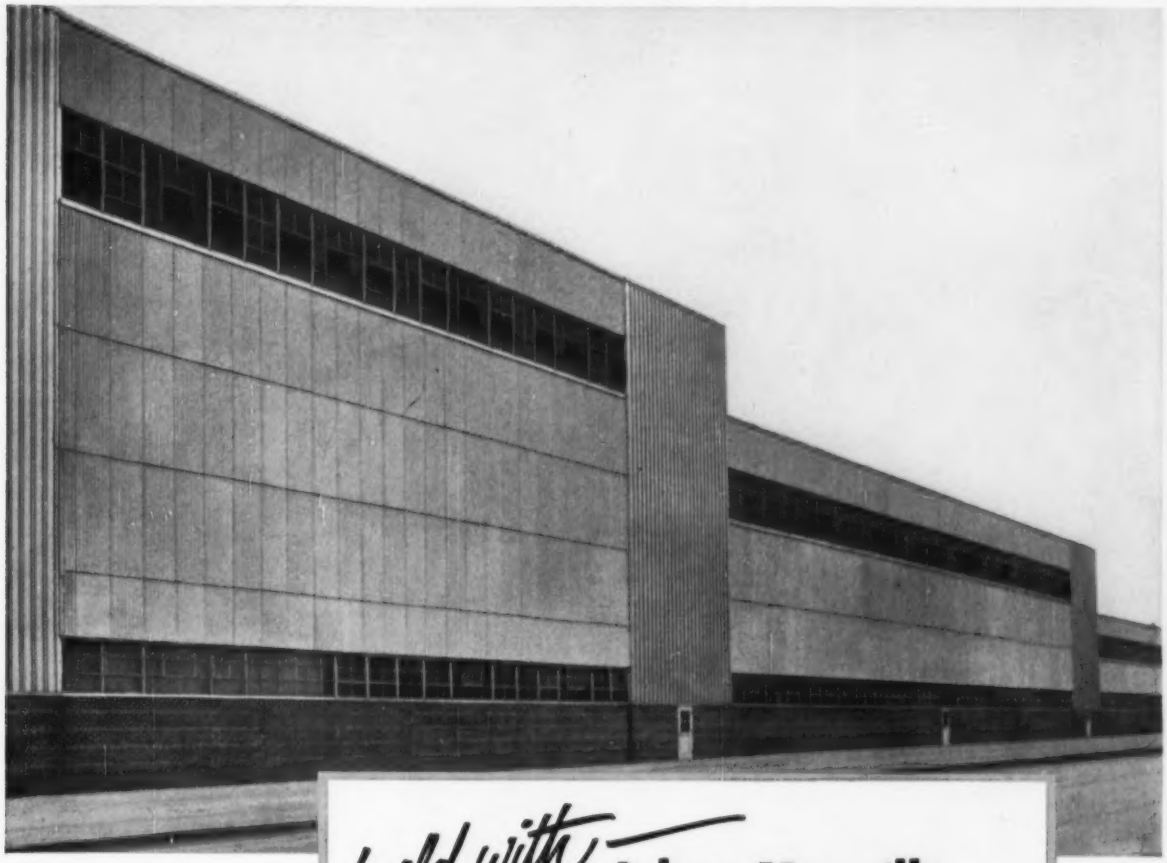
In revising their classic text on statics and dynamics, the authors strive for:

- Simplification of text.
- Improved arrangement.
- De-emphasis of algebraic treatment of problems.

In the new edition, problem sets have been revised completely. Problems are offered in an increased variety and there are a high percentage of elementary problems. Most problems contain numerical data and answers, so as to reduce the amount of algebraic manipulation required.

To teach students the engineering

No costly maintenance problem here



Clean, trim-looking Johns-Manville Corrugated Transite side walls used on this modern factory building will provide years of maintenance-free service.

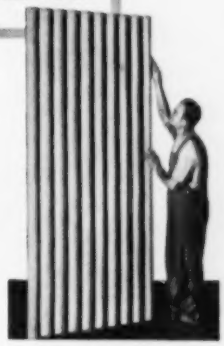
build with Johns-Manville Corrugated Asbestos Transite

For maintenance-free exterior walls and roofs, plus protection from fire, rot and weather

YOU SAVE MONEY on construction and maintenance when you build with Johns-Manville Corrugated Transite®. Corrugated Transite comes in large sheets that require a minimum of framing . . . permit fast, economical construction of industrial, commercial, institutional and agricultural buildings.

Made of asbestos and cement, Corrugated Transite is practically indestructible. It never needs paint or special treatment to preserve it . . . it's fireproof and rotproof. Corrugated Transite is also used increasingly for interiors. The streamlined corrugations and attractive shadow lines offer interesting design possibilities.

Investigate Johns-Manville Corrugated Asbestos Transite and learn how you can build quickly and easily . . . have an attractive, long-lasting, trouble-free structure regardless of size or purpose. For complete details, write Johns-Manville, Box 158, Dept. EN, New York 16, New York. In Canada, write 565 Lakeshore Road East, Port Credit, Ontario.



- Large sheets go up quickly
- Easy to fasten to steel
- Easy to nail to wood
- Easy to saw
- Easy to drill

See "MEET THE PRESS" Sundays on TV, sponsored by Johns-Manville. Consult your newspaper for time and station.

JOHNS MANVILLE JM PRODUCTS **Johns-Manville**

approach, illustrative examples are given. These are worked out in algebraic form to show the reasoning and approach behind the solutions. Here, if numerical data is given, the substitution is made only at the end of the example.

The wide coverage of the book takes in some important topics. At the end of the statics section there is a chapter on the principle of virtual work. There is a short chapter on relative motion and its applications to engineering problems at the rear of the dynamics portion. Forced vibrations and the balancing of rigid rotors are treated in the appendix.

Together with the authors' earlier volumes on "Theory of Structures" and "Advanced Dynamics" the new text is intended to give the engineering profession a wrap-up treatment of engineering mechanics and its applications to modern structures and machines.

Miscellaneous Notes

Retention of records—A revised 51-page guide on retention of private records for possible government audit and examination appears in the Aug. 28 issue of the Federal Register. A copy of the Register is obtainable for 15¢ from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Containing nearly 900 entries—each applying to either a single regulation or a group of similar regulations—the guide embraces all requirements in effect at the beginning of this year.

New Engineering Books

Substructure Analysis and Design—by Paul Anderson. Second Edition. 336 pp. Ronald Press Co., 15 E. 26th St., New York 10. $7.00.

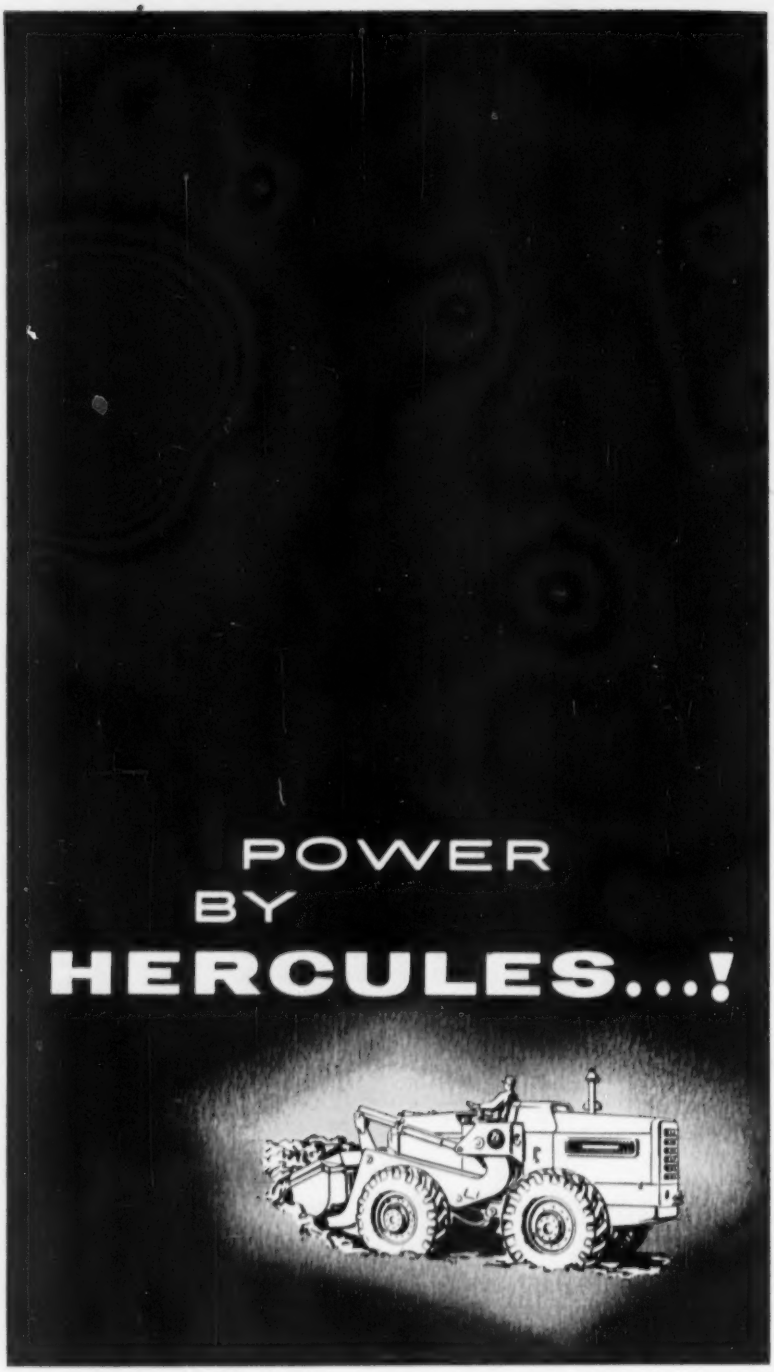
Introduction to Plasticity—by Aris Phillips. 230 pp. Ronald Press Co., 15 E. 26th St., New York 10. $7.00.

Theodolite Design and Construction—by E. Wilfred Taylor. 136 pp. Cooke, Troughton & Simms, Ltd., York, England.

Applied Structural Design of Buildings—by Thomas H. McKaig. Second Edition. 442 pp. Dodge Books, 119 W. 40th St., New York 18. $12.50.

Design of Reinforced Concrete—by Boris W. Boguslavsky. 428 pp. Macmillan Co., 60 Fifth Ave., New York 11. $7.50.

Architectural Construction—Second Edition. By Theodore Crane. 433 pp. John Wiley & Sons, 440 Fourth Ave., New York 16. $10.00.



"PAYLOADER" Tractor Shovels rely on . . . power by Hercules. These popular tractor-shovels require lightweight, high-speed, heavy-duty engines. That's why Hercules Gasoline and Diesel Engines were selected for many of the "PAYLOADER" models.

Hercules on-the-job engines are tailored to the specific power needs of all types of equipment in the following industries: transportation, agriculture, construction, mining, industrial, logging, oil field and marine.

For "top-notch" performance, insist on . . . power by Hercules in your equipment.

HERCULES MOTORS CORP. • CANTON, OHIO

Soil-cement road in New Kent County, Va. Built in 1938.

Old Route K-32, in Leavenworth County, Kan. The soil-cement was placed in 1940.

"OLD TIMERS"

prove durability and economy of Soil-Cement Roads

The veteran soil-cement roads shown here provide ample proof as to the durability and dependability of soil-cement paving. They show, too, that soil-cement pavements are delivering all-year, all-weather service in all parts of the country under all types of climatic conditions.

These roads were constructed by scientifically controlled procedures first put into practice in 1935. The passing years, with their ever-mounting traffic load, have demonstrated the soundness and effectiveness of these methods.

For additional information about low-first-cost, low-maintenance-cost, long-lasting soil-cement roads and streets, write today for free illustrated booklet, *"Soil Cement Pavement."* Distribution is limited to the United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dpt. 9d-17, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

20th ANNIVERSARY SOIL-CEMENT PAVING

Soil-cement road in Daviess County, Ky. It was built in 1938.

Soil-cement road in Chickasaw and Pontotoc Counties, Miss. Road paved in 1939.

California State Rte. 33-A (U.S. 466) in Kern Co. Built with soil-cement in 1937.

REINFORCED CONCRETE DESIGNS...

....all worked out!

• Does away with laborious calculations. Simply locate the table covering the member you are designing, apply span and load requirements, then *read off* concrete dimensions and reinforcing steel data. Follows latest codes and practices. Ten-day, money-back guarantee. No C. O. D.'s please.

412 PAGES $5.00 POSTPAID

CONCRETE REINFORCING STEEL INSTITUTE
DIV. D
38 South Dearborn Street, Chicago 3, Illinois

IF IT'S A

PLAY SAFE! ASK FOR A DEWATERING ANALYSIS BY

GRIFFIN WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

Unit Prices

Colorado Takes Bids on Processing Soil Cement

Processing the soil cement to stabilize the poor soil on this $195,402 state highway will take 15% of the contract price. The cement takes another 27%. Other major items under this contract include excavation, tamping, overhaul, drainage structures and a ST 50 bituminous surface treatment.

Work is for the Colorado State Highway Department in Denver. L. C. Bower is district engineer in Greeley and W. D. Howe is resident engineer in Brush. The job in Washington County, 36 miles from a railroad, extends 8.458 miles from Last Chance to Woodrow.

The successful bid from Siegrist Construction Company of Denver topped the engineers' estimate by 10.5% and was only 0.1% below the second low bid and 7.8% below the high six bids.

Skilled labor is paid a minimum wage of $1.10 per hour, semi-skilled labor $0.70 and common labor $0.50.

The bidders include:

1C	Siegrist Construction Co., Denver, Colo.	$195,402
2	Peter Kiewit Sons' Co., Denver, Colo.	197,750
6	N. W. Engineering Co., Denver, Colo.	211,739
	Average of five low bids	202,100
EE	L. C. Bower, Colo. State Hy. Dept. District Engineer	176,774

Bids: 7-11-56 Items	Unit	Quantity	Unit Prices 1C	2
Remov & reset mail boxes	ls	job	$50.00	$100.00
Struct (12'), remov	ls	job	1,000	750.00
Cattle pass, remov	ls	job	500.00	300.00
remov	ls	job	500.00	300.00
Culverts, clean	ea	1	100.00	125.00
Gd posts, timb, remov	ea	10	1.00	3.50
Fence, remov	lf	6,200	0.04	0.025
Excav, unclassif	cy	47,000	0.25	0.29
unclassif ditch	cy	100	1.00	1.20
Stripping	cy	4,000	0.10	0.17
Excav, dry rock, struct	cy	30	2.00	2.50
common, struct	cy	420	2.00	2.50
wet rock, struct	cy	10	2.00	2.50
common, struct	cy	50	2.00	2.50
Backfill, struct, cl. 1	cy	630	2.00	2.60
Tamping, mech	hr	90	7.00	5.75
roller, 1 unit	hr	160	5.00	12.00
F W roller, tand	hr	40	8.00	8.00
3-wheel	hr	10	8.00	8.50
rubber tired, 1 unit	hr	120	9.00	5.75
2 unit	hr	40	6.00	9.00
Tamp roller, 1 unit, furn	ea	1	100.00	125.00
F W roller, tand	ea	1	100.00	125.00
3-wheel	ea	1	100.00	125.00
rubber tired, 1 unit	ea	1	100.00	125.00
2 unit	ea	1	100.00	125.00
Wetting	Mgal	3,160	3.00	4.25
Compaction	cy	76,000	0.10	0.08
Overhaul, sta yd	ea	245,000	0.01	0.02
yd mi	ea	6,900	0.15	0.10
ton mi	ea	248,200	0.07	0.08
Subbase matl, cl 2	t	44,100	0.40	0.38
Asph rd matl, rapid cure	gal	30,500	0.175	0.19
same	gal	33,900	0.20	0.23
Stone screen, type 4	t	1,110	6.00	5.00
Cement	bbl	9,380	5.70	5.70
CMP, coated, 16"	lf	284	4.00	3.50
24"	lf	356	6.00	5.50
30"	lf	52	7.50	6.75
36"	lf	222	11.50	11.00
48"	lf	58	15.00	15.00
84"	lf	130	42.00	45.00
Pave, conc sl & dit	cy	18	60.00	68.00
Riprap	cy	10	10.00	20.00
Barb wire	lf	5,600	0.30	0.30
Gd posts, timber	ea	39	10.00	4.00
CMP arch, 43x27"	lf	54	11.50	12.00
58x36"	lf	50	16.00	16.00
Soil cement, process	sy	119,100	0.25	0.19

Time to complete: 90 calendar days.
Liquidated damages: $50.00 per day.

Missouri Storm Sewer Gives Contractors Choice on Pipe

Contractors were given three alternates for bidding on pipe and culverts for this $29,000, 1,721-lin ft storm sewer in St. Louis County, Missouri. In addition the work will be complicated, because heavy traffic must be maintained on Manchester Road and only a very limited amount of open trench is permitted by the Missouri State Highway Commission. Rex M. Whitton is Chief Engineer.

The pipe options include reinforced concrete (selected by the contractor) versus cast iron and vitrified clay for the 24-in. culvert, versus non-reinforced concrete and vitrified clay for 18-in. sewer pipe and against vitrified clay for sewer pipe with a diameter of 27 in. to 33 in. Eight- and 12-in. pipe, however, was specified for vitrified clay leaving no other option.

The $29,058 contract awarded to Paul Krummel of Jefferson City, Mo., is 16.5% below the second low bid and 4% below the engineer's estimate. All landscaping, including trees and shrubs, must be restored to original condition.

Specifications call for a 1:2:3½ concrete mixture.

Prevailing wages rate from $3.575 for skilled labor and $3.325 for semi-skilled to $2.375 for unskilled labor.

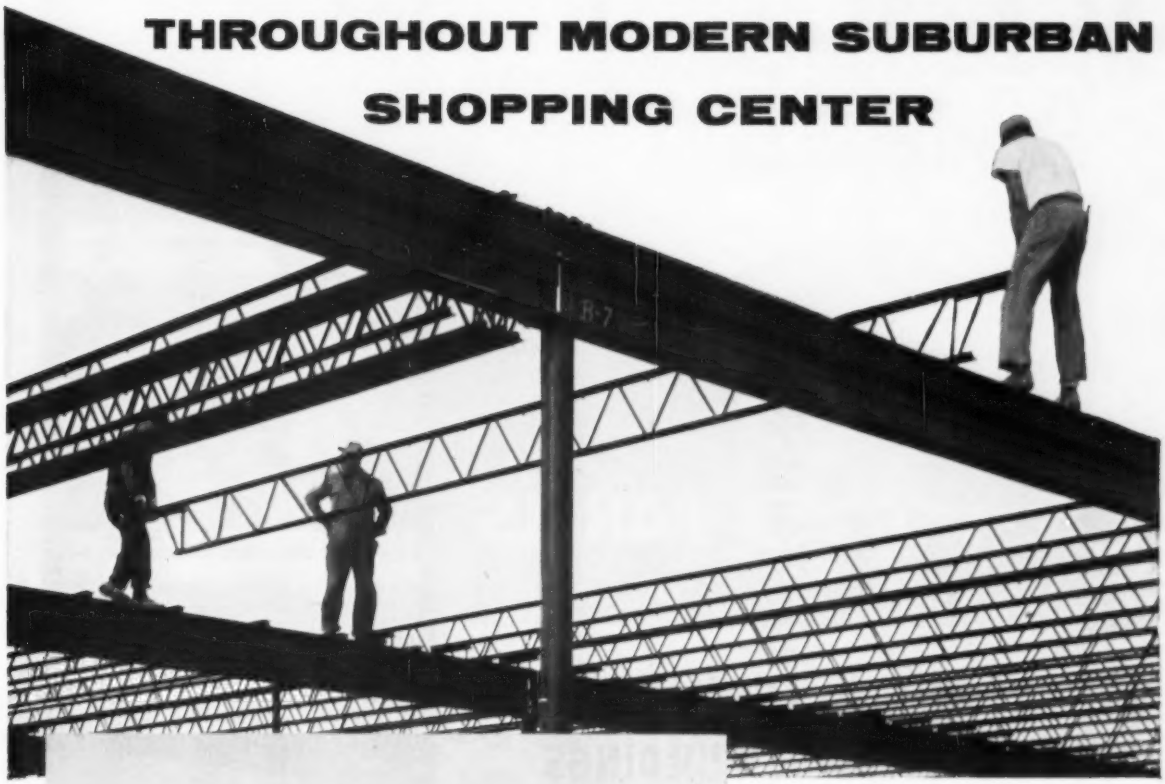
Bidders include:

1C	Paul Krummel, St. Louis, Mo.	$29,058
2	Latta Bridge Co., Inc., St Louis, Mo.	34,745
5	Fred M. Luth & Sons Inc., St. Louis, Mo.	47,286
EE	Missouri State Highway Department	30,280

Bids: 6-28-56 Items	Unit	Quantity	Unit Prices 1C	2
Excav, cl A	cy	20	$35.00	$2.50
cl 3 for struct	cy	2,981	4.45	4.70
Pavement, remov	sy	65	2.50	1.80
Misc items, remov	ls	job	300.00	450.00
Surf, gravel or crush stone	cy	4	12.00	20.00
Pave, conc, 8"	sy	64.5	8.00	15.00
Conc, cl B, other than box culv	cy	3.9	200.00	130.00
cl C, cradles	cy	1.8	18.00	30.00
Culv, 24"	lf	42	5.01	7.50
VCP, sewer, 8"	lf	36	1.40	2.00
12"	lf	24	2.30	2.50
Pipe, 18"	lf	33	3.60*	5.00
27"	lf	41	5.56*	8.00
30"	lf	470	6.45*	8.30
33"	lf	667	7.49*	10.60
Steel, reinforcing	lb	290	0.15	0.30
Rubble msry in mortar	cy	5	20.00	40.00
Brick msry, manholes	cf	632	2.30	4.40
Curb & gutter, conc	lf	20	3.50	7.60
Approach, paved, 7"	sy	38	8.00	10.00
Gutter, cobblestone	sy	4	11.00	10.00
Sidewalk, conc, 4"	sy	10	6.30	8.00
Grates & bearing plates	lb	840	0.60	0.45
Manhole frame & cover	ea	6	49.00	60.00
Curb inlet	ea	3	125.00	80.00
Sodding	sy	260	0.70	1.00
Base, rolled stone, 7"				
Water, 100 gal	ea	34	1.00	1.30
Aggregate	t	158	3.00	3.50
Spread, shape & compact	sy	410	0.20	1.30
Pavement, asph conc, 1½"				
Primer, RC-0 or 60-100 pen asph	gal	210	0.20	0.40
Sanding primer	t	1	10.00	6.00
Asph conc, type C	t	34	13.50	15.00

Time to complete: 90 working days
Liquidated damages: $50 per day
* based on RC, 2nd low bid not specified.

LACLEDE CONSTRUCTION STEEL USED THROUGHOUT MODERN SUBURBAN SHOPPING CENTER



WESTROADS SHOPPING CENTER,
St. Louis, Missouri

ARCHITECT: JOHN GRAHAM
AND CO., Seattle, Washington

GENERAL CONTRACTOR:
FRUIN-COLNON CONTRACTING CO.,
St. Louis, Missouri

STEEL JOIST INSTITUTE MEMBER SJI © SJI

The utmost in comfort and convenience is offered shoppers at the striking Westroads Shopping Center in suburban St. Louis. Dominated by the massive Westroads branch of Stix, Baer & Fuller Department Store, the center includes seven additional retail outlets: food, variety, drug, women's and children's specialty, ladies' ready-to-wear, shoe and jewelry stores.

Laclede construction steels of virtually every type were used throughout this modern development: straight chord steel joists, Multi-Rib reinforcing bars, welded wire fabric, spirals, pipe, form and tie wire, conduit and electrical metallic tubing.

For The Best In Construction Steels . . . Specify Laclede

LACLEDE®

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

QUICKLY-ERECTED CURTAIN WALLS FOR ALL TYPES OF BUILDINGS

Do 3 Jobs in 1! Cemesto Panels provide a *structural wall* . . . thermal *insulation* . . . maintenance-free incombustible *finished surfaces* inside and out. Save on heating and air conditioning costs. They blend harmoniously with brick, stone, wood, glass, and metals. May be worked with ordinary tools on the job, or pre-cut to required special sizes at the mill for faster application. Panels fasten to steel framing with metal accessories, or to wood framing with nails or screws.

Attractive Extruded Aluminum Accessories harmonize with gray Cemesto Panel surfaces to lend beauty to curtain walls. Built-in Neoprene gaskets assure weather tightness.

Architects specify this remarkable all-purpose building material for *curtain walls, roof decks,* and *movable interior partitions.* Write today for New File 5500 . . . 52-page simplified data book on design and application details of Cemesto Structural Insulating Panels. The Celotex Corporation, Dept. ENR-96, 120 S. LaSalle St., Chicago 3, Ill.

Another Famous CELOTEX *Product*

CEMESTO
REG. U. S. PAT. OFF.

STRUCTURAL INSULATING PANELS

THE CELOTEX CORPORATION • 120 S. LASALLE STREET • CHICAGO 3, ILLINOIS

for INDUSTRIAL BUILDINGS

for COMMERCIAL BUILDINGS

for SCHOOL BUILDINGS

for RESIDENTIAL BUILDINGS

***Cemesto Panels** are strong, rigid, permanent structural insulating units. Their core is Celotex cane fiber insulation board effectively protected against dry rot and termite attack by the exclusive Ferox® Process. Non-combustible cement-asbestos facings are bonded to both sides of this insulating core by a moisture-proof adhesive. Cemesto Panels resist fire, weather, and wear, need no painting or maintenance.

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Oct 4—Cement, Aggregate, Ready-mixed Concrete, Asphalt
- Oct 11—Iron and Steel Products, Pipe
- Oct 18—Wood Products, Glass, Explosives, Chemicals
- Oct 25—Clay Products, Lime, Plaster, Paint, Roofing

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	STRUCTURAL CLAY TILE PARTITION SCORED Per M. lots of 2,000 pieces or over, 4x12x12 in.	STRUCTURAL CLAY TILE PARTITION SCORED Per M. lots of 2,000 pieces or over, 6x12x12 in.	STRUCTURAL CLAY TILE LOAD BEARING SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	STRUCTURAL CLAY TILE LOAD BEARING SCORED Per M. lots of 2,000 pieces or over, 10x12x12 in.	STRUCTURAL CLAY TILE LOAD BEARING SCORED Per M. lots of 2,000 pieces or over, 12x12x12 in.	BRICK Per M. in quantity Common backing	BRICK Per M. in quantity Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	LIME Per ton, in paper, Carload lot, Common hydrated	LIME Per ton, in paper, Carload lot, Pulverized or lump
Atlanta	$148.25p	$148.25p	$296.50p	$333.55p	.....	.....	$30.50p	$32.70p	$23.50	$24.50	$.....
Baltimore	203.00	217.00	406.00	485.50	596.00	681.00	36.00c	41.00c	33.00	22.00	.....
Birmingham	135.00p	152.00p	.....	303.00p	376.00p	465.00p	27.00ff	38.00gg	33.35	22.30	26.33
Boston	210.60†	224.60†	421.10†	467.80†	.....	.....	40.00p	44.00p	38.70†	30.00†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	30.00	32.00	36.00	29.00	.....
Cincinnati	205.00j	225.00j	296.00jdd	213.00j	288.00j	314.00j	45.00j	46.00j	28.50j	24.25j	28.50j
Cleveland	202.50**	215.00**	.....	.....	.....	.....	40.00	42.00	29.75	26.00	.....
Dallas	.....	152.00	.....	.....	.....	.....	25.75	45.00	32.00	31.00	.....
Denver	.....	.....	.....	.....	.....	.....	36.00	47.50	34.80hh	28.00hh	34.00hh
Detroit	213.00	226.00	425.00	.....	620.00	710.00	44.50ee	44.00ee	34.00	30.00	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	33.00	33.00	32.00	27.50	28.50
Los Angeles	r	r	r	r	r	r	30.50‡	.....	34.00	34.00	35.00
Minneapolis	188.00p	210.00p	429.00p	210.00pw	.....	.....	43.00*p	52.50ii	44.50hh	35.50hh	47.50hh
Montreal	164.00aq	178.00au	325.00au	270.00	288.00	.....	42.00	49.00	39.00	22.00	13.75u
New Orleans	186.00	188.00	380.00	380.00	.....	.....	40.00	55.00	30.60	21.80	21.50
New York	158.10h	168.60h	231.70ch	255.20hx	.....	.....	44.00	.....	37.00	35.00	.....
Philadelphia	150.30	166.80	312.70	375.20	.....	.....	30/34	34/40	27.60	25.60	3.17
Pittsburgh	154.00	162.00	292.00	340.00	420.00	495.00	36.00	46.00y	32.00	29.50	2.97m
St. Louis	178.50cc	203.00cc	358.00cc	500.00cc	.....	.....	43.00ai	41.50a	1.90aaq	.80aaa	1.30az
San Francisco	156.85a*	177.10a*	235.30ddda*	.....	.....	.....	39.50*	39.50*	27.75	27.75	30.50
Seattle	225.00cc	250.00cc	450.00cc	250.00ccw	.....	.....	43.00a	55.00a	48.00ahh	38.25hh	3.90mhh
Toronto	138.70	148.90	273.75	222.00f	.....	.....	38.00	63.00	40.00	33.50	31.00

*† F.o.b. yard Roxbury. *a Smooth. *b Per 50 lb. bags. *c 6 x 12 x 12 in.-3 cell. *d Pulverized hot. *e 5⅞, 10th following month. *f 8 x 8 x 12. *g 5½ x 8 x 12. *h F.o.b. trucks, job site N.Y.C. *j Truck load or over. *k $1.00 discount. *l Red face. *m Per bbl., 180 lb. *n 7⅝ x 7⅝ x 12. Speed tile. *p Truck lots. *q Provincial and Municipal tax extra. *r Not used because of earthquake danger. discount for cash. *s 5½ x 8 x 11½. *u Tax exempt. *v Sand lime. *w 5 x 8 x 12. *y Stacked. *z Pebble lime price per 80 lb. sack. not sold per ton. *bb LCL. *cc Truck delivery. *dd 6 x 12 x 12. *ee Pebble lime. *ff 80% common. *gg Rough, $40.00 Smooth. *hh Ist. *ii Chi common § F.o.b. yard *** Warehouse delivery. ** F.o.b. plant Stockton. *aa Price per sack. Lime

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry a	WHITE LEAD Per 100 lb. in 100 lb. cases In oil w	READY-MIXED PAINT Per gal., drums Graphite b	READY-MIXED PAINT Per gal., drums Aluminum c	READY-MIXED PAINT Per gal., drums Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	ROOFING SUPPLIES; Carload lots f.o.b. factory Asphalt felt, per 100 lb.	ROOFING SUPPLIES; Carload lots f.o.b. factory Tar felt, per 100 lb.	ROOFING SUPPLIES; Carload lots f.o.b. factory Asphalt coating per gal.	ROOFING SUPPLIES; Carload lots f.o.b. factory Tar pitch 380 lb. bbl. per ton
Atlanta	$19.25	$28.275	$3.59	$3.86	$3.31	$3.15	$2.95	$2.95	$0.63	$57.75
Baltimore	19.00	27.90	2.75	4.25	3.35	2.78	4.25	4.25	.48	60.15
Birmingham	19.25	28.275	3.90	3.40	....	3.37	2.80ii	2.80ii	.57ff	42.65ee
Boston	19.00	27.90	....	....	....	3.30gq	2.85aq	2.85aq	.45q	86.00q
Chicago	19.00	27.90	....	....	....	3.57‡u	3.00‡o	3.00‡o	43.50‡bb	52.70‡
Cincinnati	19.00	27.90	....	....	....	3.15	2.63	2.63	.594y	50.36
Cleveland	19.00	27.90	2.297gq	2.587gq	2.736gq	3.15q	2.62o	2.62o	.464y‡	47.00kk
Dallas	19.25	28.45	....	3.13B	....	3.50q	3.75o	4.35o	.36	58.50kk
Denver	19.50	28.40	3.29	3.15	3.04	2.84	2.30o	2.30o	.48ff	45.00
Detroit	19.00	27.90	2.35	3.35	2.50	2.656	2.409	3.409	.53	47.30
Kansas City	19.00	28.65	3.64	3.12	2.76	3.65ii	3.40o	3.49o	.55y	83.70
Los Angeles	19.00	28.15	3.30n	4.50n	4.20n	3.20n	2.15en	f	.70ay	f
Minneapolis	19.00	29.88/28.02	....	....	....	2.835dd	2.358iidd	2.358iidd	.46idd	48.00r
Montreal	.....	21.95	5.02Dfl	5.94Efl	4.65Ffl	5.25f	4.65f	4.65f	1.60	.....
New Orleans	.....	.....	....	....	....	3.15	2.62	2.62	0.756	.....
New York	19.00	27.90	....	....	....	2.84G	2.366o	2.366o	.463Gs	48.60*
Philadelphia	19.00	27.90	3.60	3.40/3.65	3.50/4.50	2.54	2.94	2.94	.37	26.00
Pittsburgh	19.00	27.90	3.10	3.36	3.68	2.72	2.85o	2.85o	.42	58.75
St. Louis	19.00	27.90	....	....	....	2.86n	2.36h	2.36h	.46y	84.35
San Francisco	19.00	28.15	2.95	4.15	3.40	2.70	1.85**	2.85nd	.56	54.00
Seattle	19.00	28.40	3.30mcc	4.02mcc	....	3.84mqcc	3.33hmcc	....	.65mcc	47.20mu
Toronto	.....	.....	....	....	....	4.45	4.10v	4.65o	1.70j	88.00A

*‡ Delivered. * Note: Red lead in oil 50c higher than white lead in oil. *a Red lead prices change frequently due to pig lead price changes. *b U. S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e 15 lb. *f Per 432 sq. ft. *g F.o.b. yard, Roxbury. *h Per roll, 65 lb. *i Net carload lot prices; Minneapolis and vicinity. *j 45 gal containers. *k Per cwt. *l Not used. *m 1% discount for cash. *n F.o.b. city. *o Per 60-lb. roll. *p 5-drum, 50 gal. ea. *q Per 90-lb. roll. *r F.o.b. factory, Chicago. *s Truckload. *t Federal tax included, add 5% mun. & prov. tax. *u Per 90-lb. square. *v Per ton. *x Mineral surfaced. *y 55-gallon container. *z Drums. *aa 15 lb., 324 sq ft roll. *bb Roofers coating and cement; Price per ton. *cc LCL, truck delivery. *dd 2% cash discount. *ee Asphalt pitch in 100 lb. packages. *ff 5-gal. drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per roll. *A 400 lb barrels. *B ASTM Spec D-962-49. *D Std. Black. *E Ready-mixed. *F Over 80% ferric oxide. ** Aver. wt. approx. 425 to 550 lbs. drums. *G F.o.b. factory points

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	PLASTER† Gauging per ton	VERMICULITE† Home Insulation pellets per bag of 4 cu ft	VERMICULITE† Plaster aggregate per bag of 4 cu ft	VERMICULITE† Concrete Aggregate Untreated per bag of 4 cu ft	PERLITE Plaster Aggregate per bag of 4 cu ft	PERLITE Concrete Aggregate Untreated per bag of 4 cu ft	ALUMINUM SHEET△ Flat/ .102" th 36"x96" & 48"x144" per lbr	ALUMINUM SHEET△ Corr roof .032" th 35"x12' per sh/c	STAINLESS STEEL SHEET*-TYPE 302g 20 ga 48"x96"-120" per cwt/kk	STAINLESS STEEL SHEET*-TYPE 302g 28 ga 36"x120" per cwt/mm	COPPER WATER TUBING-TYPE L 2000 ft lots per ft/s ⅜"/b	COPPER WATER TUBING-TYPE L 2000 ft lots per ft/s ½"/c
Atlanta	$30.00	$35.00	$1.55a	$1.45a	$1.80d	$1.40	$1.40	$0.422n	$6.57e	$61.44n	$67.50n	$18.11f	$25.41f
Baltimore	22.85	33.25	0.95	1.15	1.15	1.15	1.65	0.391	0.427r	56.25	64.25	0.1951	0.2745
Birmingham	38.00	43.00	1.55	1.55	1.80f	1.55	1.55	0.475	9.52	62.26	70.76	0.1811	0.2541
Boston	22.00	29.00	1.15/1.20	1.18/1.23	1.45	1.45	1.50	0.505	28.56op	50.373dd	65.51ddff	0.1811	0.2541
Chicago	26.80	26.80	1.55	1.60	1.60f	1.50	1.50	0.474	9.805fp	62.40fee	70.90fee	0.1811	0.2541
Cincinnati	21.60*s	21.60*s	1.75	1.75	1.75	1.38	1.44	0.400	8.66	60.95	66.70ff	0.1811	0.2541
Cleveland	28.00	43.00	1.13	1.16	1.24f	1.45	1.45	0.44na	8.66	62.43	70.93	18.11f	25.41f
Dallas	29.80	31.80	1.20	1.25	1.30f	1.21	1.62	0.379	0.439r	55.00	63.00	0.1449	0.2029
Denver	25.00	25.00	1.45	1.35	1.50	1.40	1.55	0.444	9.80	60.19gg	70.69gg	0.1811	0.2541
Detroit	25.00	25.00	1.28	1.32	1.41	1.54	1.61	0.455	9.235	62.50f	71.00f	15.22f50	28.83f
Kansas City	30.00	35.00	1.20	1.30	1.40	1.35	1.50	0.451	10.95	62.32	70.32	20.54f	28.83f
Los Angeles	26.20	27.20	1.25ii	1.20ii	1.25ii	....	1.60	0.484	8.99	61.85	82.10	0.2054	0.2883
Minneapolis	32.00	32.00	1.50	1.60	1.80	1.40	1.40	0.481	8.65	62.87	76.37ff	0.1851	0.2541
Montreal	28.80	33.20	1.10	1.30	1.30	1.15n	1.15n	0.437	9.25	66.50	....	0.264	0.372
New Orleans	32.00	45.00	1.25	1.25	1.35	1.25	1.25	0.422	8.303	57.18	65.18	0.1987	0.2796
New York	24.00	30.00	1.25	1.25	1.30	1.30	1.30	0.474Ao	9.46f	63.23	71.73	18.11f	25.41f
Philadelphia	23.25	32.00	1.35	1.35	1.40	....	....	26.50Bee	7.50f	53.23f	60.98f	18.57f	26.00f
Pittsburgh	27.50	31.00	1.30	1.30	1.32	1.35	1.35	0.42	9.19	56.81	62.63	0.2045	0.2572
St. Louis	29.00	40.00	1.30	1.55jj	1.50	1.60	1.45	0.487	9.80	62.83	69.08	18.11fm	25.41fm
San Francisco	27.85	32.00	1.15	1.15	1.36	1.10	1.10	0.49	8.90cc	66.99	75.47	0.1811	0.2541
Seattle	28.00	41.00	1.45	1.25k	1.85l	1.40k	....	0.422	8.303	64.10	72.60	0.1951	0.2745
Toronto	32.50	42.00	1.20	1.30	1.35	....	....	0.412	21.55	71.60	80.50	0.3289pp	0.4136pp

† trucklots, delivered * carload △ delivered *a fob city *b ½" O.D. *c ⅝" O.D. *e per 100 ft *g 5 tons & up; cold roll, anneal & pickled; 2B finish *h 15M lb *j 1100 & 3003 alloy, mill finish *k per bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob plant, fr allow *o 5M lb & up *p 100 sq ft quantity *r per lb *s 30¢ bag *t 36" x 96"-10.81 lb/sh; 48" x 144"; 21.7 lb/sh *u 19.31 lb/sh *v fob plant *w 48" x 144" *x 36" x 96" $13.25/sh *aa 16M lb & up *bb fob mill *cc 26" x 8-12" *dd add $0.75 cwt for boxing *ee 4 tons & up *ff 26 ga *gg add $2/cwt boxing; $0.75/cwt on skids *hh Theoretical wt for 48" x 96"; 80.4-lb, per sh. *ii 300-bag lots *jj per 100-lb bag *mm Theoretical wt: 19.7-lb per sh. *nn Deliv, warehouse means *oo ¼" O.D. *pp Incl 10% sales tax

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Oct. 4—Cement, Aggregate, Ready-mixed Concrete, Asphalt
- Oct. 11—Iron and Steel Products, Pipe
- Oct. 18—Wood Products, Glass, Explosives, Chemicals
- Oct. 25—Clay Products, Lime, Plaster, Paint, Roofing

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft 3/8"	1/2"	GYPSUM BOARD LATH plain or perf per Msq ft 3/8" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft 1/2" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft 1/2" sq ed	25/32" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft 1/2"	MINERAL WOOL INSULATION† loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION† loose, per 40-lb bag a	3" batts per M sf	ALUMINUM FOIL 60# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq. ft
Atlanta	$70.00	$60.00	$43.00	$70.00	$70.00	$127.00	$77.00	$1.00	$60.00	$1.65[b]	$65.00	.....	.....
Baltimore	51.25[f]	44.75[f]	32.55[f]	55.00[f]	65.00[f]	108.50[f]	69.00[f]	1.30	66.50	1.60	45.00	$4.00[g]	$33.50
Birmingham	73.00	60.00	47.77	75.00	80.00	134.00	79.00	1.40	70.00	1.80	75.00	2.99[g]	.....
Boston	67.00[m]	46.50[m]	33.00[m]	52.00[m]	64.00[m]	109.00[m]	79.00[hh]	1.45	70.00	.....	53.00	6.00	55.50
Chicago	67.00	52.00	43.00	62.00	85.00	123.00	85.00	1.85	80.00	.....	63/65[bb]	5.25[r]	.....
Cincinnati	46.40[w]	41.60[w]	30.80[w]	49.81[w]	67.50[w]	120.00[w]	70.00[w]	1.25	60.00	1.25	73.50	2.84	50.00[w]
Cleveland	60.50	55.00	40.00	65.00	70.00	111.00	70.00	1.35/1.50	75.00	1.60[ee]	57.50[ee]	17.50[r]	80/55
Dallas	58.00	55.00	42.50	65.00	75.50	122.50	70.00	1.90	66.00	1.35	65.83	4.25	.....
Denver	62.00	54.50	41.00	62.00	75.90	126.00	74.90	.....	71.00[k]	1.20[r]	55.00	11.00[r]	21.00
Detroit	59.00	53.00	36.00	60.00	84.50	98.00	67.50	.....	.....	1.95[b]	83.00	.....	.....
Kansas City	55.00	55.00	40.00	65.00	72.00	120.00	75.00	1.40	80.00	1.40	80.00	11.24[dd]	19.44
Los Angeles	64.00	50.00	0.32[ss]	66.50	71.87	121.25	80.00	.....	63.00	1.35[s]	64.00	4.20[g]	.....
Minneapolis	60.00	70.00	0.40[z]	80.00	70.00	140.00	78.00	1.60	80.00	1.80	80.00	6.50	.....
Montreal	58.00	48.00	36/39	53.00	80.00	.....	68.00	1.30	58.00	1.30	58.00	18.00[s]	86.00
New Orleans	55.00	48.00	45.00	70.00	75.00	125.00	72.50	1.75	68.00[ee]	.....	.....	.....	.....
New York	53.00	45.50	35.00	54.00	69.00	109.00	70.50	1.55	65.00	1.90[b]	67.00	5.20[t]	43.50[z]
Philadelphia	50.00	48.00	34.00	48.50	67.50	105.00	49.20	.....	63/70	.....	70/75	5.50/6	34.50/44.50
Pittsburgh	65.00	55.00	40.00	68.00	65.00	105.00	80.00	1.90	72.00	1.90	72.00	4.10	.....
St. Louis	62.00	55.00	39.00	65.00	65.00	110.00	75.00	1.60	80.00	1.65	62.00	6.67[s]	.....
San Francisco	52.00[z]	44.75	0.34[z]	56.00	59.00	99.00	58.00	1.80	56.50	1.55	66.50	4.95	55.00
Seattle	66.00	57.50	46.50	65.00	74.50	125.00	73.50	1.60[y]	74.00	1.60[aaa]	48.00[aa]	4.25[g]	46.50
Toronto	61.00	50.00	38.00	64.50	75.00	.....	.....	0.90	51.00	.....	51.00	17.00[s]	43.65

[a] for hand packing [b] per 30# bag [c] carloads [d] 40# kraft paper [e] 20# sq ft bag, 4" thick [f] full trailer loads [g] 80# kraft paper backing [h] LCL [i] 40 lb roll [j] flame-proof $75.00 [m] 10 ton quantities [n] distributor's siding [o] per Msf roll [p] per sf [r] per cwt [s] per 35# bag [t] per M sq ft [w] fob city [x] per sq. yd. [y] 26# bag [z] 32# bag [aa] fob warehouse [bb] 2" [cc] in 250 sf rolls, of 16", 20", or 24" width.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const
Atlanta	$3.35	$2.80	$3.05	$2.80	$3.00	$3.20	$3.20+25¢[cc]	$1.45	$1.45
Baltimore	3.45+10¢[d]	2.95+7½¢[d]	3.50+7½¢[d]	2.70/2.95+10¢[d]	3.25+7½¢[d]	3.30	3.20+7½¢[d]	1.60+7½¢[d]	1.60+7½¢[d]
Birmingham	3.50	2.70	3.00+7½¢[d]	2.52	2.92	3.175	3.17+10¢[n]	1.50	1.60
Boston	3.50+10¢[d]	3.05+10¢[d]	3.55+7½¢[d]	3.50	3.50+20¢[f]	3.30+12¢[n]	3.20+10¢[d]	2.30+7¢[r]	2.30+7¢[r]
Chicago	3.62½+7½¢[h]	3.35+10¢[s]	3.55+7½¢[d]	3.25+5¢[m]	3.54+23¢[p]	3.48+21¢[f]	3.37+22¢[cc]	2.57½+7½¢[h]	2.57½+7½¢[h]
Cincinnati	3.60	3.30	3.35+7½¢[d]	3.075/3.325	3.375	3.50+3¢[x]	3.50+9½¢[f]	2.35	2.25
Cleveland	3.55+10[s]	3.575	3.50+7½¢[d]	3.575	3.575	3.60	3.375+10¢[d]	2.825	2.75
Dallas	3.70	2.95	3.075	3.00+7½¢[h]	3.437+7½¢[h]	3.12½+7½¢[h]	3.10+7½¢[h]	1.55	1.55
Denver	3.625	3.075	3.00+7½¢[r]	2.93	3.30+7½¢[r]	3.00	3.17+15¢[ff]	2.00	2.00
Detroit	3.53+20¢[cc]	3.20+29¢[s]	3.47½+20¢[ff]	3.20+20¢[cc]	3.51+24¢[r]	3.50+30½¢[ff]	3.45+14¢[ff]	2.45+20¢[cc]	2.55+10¢[s]
Kansas City	3.70	2.90	3.075	3.065	3.375	3.325[p]	3.15+7½¢[h]	2.155	2.18
Los Angeles	3.80	3.00+10¢[d]	3.40+10¢[s]	2.95+10¢[d]	3.75+12½¢[h]	3.60	3.525+10¢[d]	2.30+7½¢[h]	2.30+7½¢[h]
Minneapolis	3.425	3.00	3.17	2.95	3.05+23[cc]	3.12[n]	3.00+20[cc]	2.25	2.25
New Orleans	3.28	2.675	3.00+7½¢[h]	2.80+7½¢[h]	2.82½+5¢[m]	3.025+7½¢[h]	3.05+15¢[s]	1.55	1.55
New York	4.05+36¢[cc]	3.65+22¢[cc]	3.95+34¢[cc]	3.90+31¢[cc]	4.00+50¢[r]	3.50+38¢[cc]	3.85+35¢[bb]	2.60+21¢[cc]	2.60+21¢[cc]
Philadelphia	3.75+17¢[r]	3.385	3.55+18¢[r]/3.15½/3.90½+10¢[r]		3.65+15¢[r]	3.77+15¢[cc]	3.75+11½¢[r]	2.10	2.40
Pittsburgh	3.75+17½¢[cc]	3.325+7½¢[h]	3.30+7½¢[h]	3.35+7½¢[h]	3.40+17½¢[cc]	3.50	3.425+7½¢[h]	2.25+5¢[m]	1.98+10¢[r]
St. Louis	3.75+19¢[r]	3.25+7½¢[h]	3.25+7½¢[h]	3.325	3.425+7½¢[h]	3.60+25¢[r]	3.55+21¢[ff]	2.30+7½¢[h]	2.30+7½¢[h]
San Francisco	3.75+12½¢[cc]	3.25½+10¢[s]	3.40+10¢[s]	2.98+10¢[s]	3.61+20¢[cc]	3.37½+23¢[cc]	3.45+46¢[K]	2.325+10¢[s]	2.325+10¢[s]
Seattle	3.55+10¢[d]	2.80+10¢[d]	3.07+10¢[d]	2.90+10¢[d]	3.27½+10¢[d]	3.20+19½¢[x]	3.15+21¢[f]	2.37+10¢[d]	2.37+10¢[d]
Montreal	2.10+14¢[t]	1.90+14¢[t]	2.00+14¢[t]	1.80+14¢[t]	2.12+18¢[t]	2.10+18¢[t]	2.12+18¢[t]	1.30+10¢[t]	1.30+10¢[t]
Toronto	2.61+10¢[**]	2.40+10¢[**]	2.40+10¢[**]	2.50+10¢[**]	2.45+16¢[**]	2.65+10¢[**]	2.44+10¢[**]	1.45+6¢[**]	1.45+6¢[**]

ENR Skilled Average (Bricklayers, Carpenters, Iron workers): $3.420. **ENR Common Average** $3.192

[*] Cost of living bonus now included in basic wage. [†] 8% fringe benefits. [**] 4% vacation fund. [a] 6 hr. day. [b] 7 hr. day. [c] 3% vac. stamp fund plus 7½¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. [d] 10¢ H&WF. [e] 10¢ VF. [f] 6% WF. [g] 11½¢ WF. [h] $2.85 homes & housing plus 7½¢ WF. [i] 17¢ WF. [j] 10½¢ hr. WF. [k] 7½¢ hr. WF. [l] 4% VF. [m] 5¢ hr. WF. [n] Plus 11% fringe benefits on gross wage ea. yr. [o] 10¢ PF. [p] 3% WF, 3% PF. [q] 10¢ ins; 8% vac. and holi-day pay. [r] 4% WF and 20¢ PF. [s] 5% W&PF, 4% VF, 1% NC, 6 PH. [t] 7½¢ H&WF. [u] 1½% PF. [v] 10¢ WF. [w] Negotiating. [x] 5¢ VP. [y] 23¢ WF. [z] 5¢ HP. [A] 15¢ WF, 15¢ PF, 20¢ B.F. [B] 7½¢ VP, 5¢ PF, 1½¢ EF. [C] 15¢ WF. [D] 10¢ H&WF, 5¢ organ. [E] 6% WF, plus travel pay per day. [F] Plus $4 per day Annuity contrib. [G] 3¢ Prom. [H] 7¢ WF, 6% VF. [I] 15¢ H&WF, 5¢ for Advtg. [J] 5% WF, 6 PH. [K] 25¢ W & PF, 15¢ VF. [L] 3% WF, 3% PF, 2% VF, 1% EF. [M] 7½¢ PF. [N] 1% WF. [P] 10¢ hosp. ins.; 5¢ vac., 5¢ VF. [Q] 1 drum, 2 drums 3.40/3.55+10¢. [R] 12¢ WF and 1¢ apprentice. [S] 12½¢ H and WF. [T] 21¢ H, W & VF. [U] 7½¢ WF, 4% VF, 1% PF. [V] 5% WF, 3% PF. [W] 2% F. [X] 12¢ VF, & 7½¢ H & WF. [Y] 7¢ H & WF. [Z] 9½¢ WF. [aa] 7¢ WF, 15¢ PF. [bb] 8¢ WF. [cc] 25¢ WF.

	Truck drivers 1½ T	Truck drivers —4 cy	Truck drivers +4 cy	Tractor Operators incl. bulldozers 34-49 hp	Tractor Operators incl. bulldozers 70-100 hp	Tractor Operators incl. bulldozers 100 & over	Tractor scraper 15-16 cy	Power cranes & shovels ½ cy	Power cranes & shovels ¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$1.50	$	$	$2.525	$2.525	$2.525	$2.525	$3.05	$3.05	$2.525	$3.30	$1.67
Baltimore	1.60+7½¢[d]	1.75+7½¢[d]	1.85+7½¢[d]	2.85/3.30[b]	2.85/3.30[b]	2.85/3.30[b]	2.85/3.30[b]	3.40/3.55+10¢[d]	[b] 3.40/3.55+10¢[d]	2.85/3.30[b]	2.85/3.30[b]	2.25
Birmingham	1.60	1.70[f]	2.05[m]	2.66	2.66	2.66	2.80	2.80	2.80	2.76	2.385	1.75
Boston	2.195[r]	.....	.....	3.025[d]	3.025[d]	3.025[d]	3.025[d]	3.40	3.40	3.40	2.95	2.45+7¢[r]
Chicago	2.08+12¢[cc]	.....	.....	3.00+5¢[n]	3.15+5¢[n]	3.05+5¢[n]	2.85+5¢[n]	3.60+5¢[n]	3.60+5¢[n]	2.95+5¢[n]	2.95+5¢[n]	.....
Cincinnati	2.20[aa]	2.30[aa]	2.40[aa]	3.075	3.075	3.075	3.075	3.325	3.325	3.325	3.325	3.325
Cleveland	2.50+10¢[m]	2.50+10¢[m]	2.50+10¢[m]	3.325	3.325	3.325	3.325	3.575	3.575	3.325[h]	3.20	3.20
Dallas	1.55	1.55	1.55	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.00[d]	1.70/2.00[d]
Denver	2.15	2.15	2.25	2.15	2.76	2.76	2.76	2.93	2.93	2.76	2.76	2.35
Detroit	2.45	2.45	2.45	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.025+10¢[m]	2.68+30¢[m]
Kansas City	2.115[n]	2.115[r]	2.19[r]	2.30	2.85[r]	2.85[r]	2.85[r]	3.095	3.095	2.71	2.85[r]	2.24
Los Angeles	2.405+7½¢[n]	2.405+7½¢[n]	2.435+7½¢[n]	3.05+10¢[m]	3.05+10¢[m]	3.05+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	2.54+10¢[m]	2.51+7½¢[n]
Minneapolis	2.25	2.25[r]	2.40[r]	2.63	2.85[r]	3.07[r]	2.85	3.07[r]	3.33[r]	2.63	2.52	2.35
New Orleans	1.875	1.925	1.925	2.15+7½¢[u]	2.90+7½¢[u]	2.90+7½¢[u]	2.80+7½¢[u]	2.80+7½¢[u]	2.80+7½¢[u]	2.80+7½¢[u]	2.15+7½¢[u]	1.625
New York	2.21[aa]	2.75+14¢[bb]	2.75+14¢[bb]	3.27½+26¢[cc]	3.27½+26¢[cc]	3.27½+26¢[cc]	3.40+27¢[cc]	4.15+33¢[cc]	4.15+33¢[cc]	3.40+27¢[cc]	3.40+27¢[cc]	3.00+15¢[cc]
Philadelphia	.....	1.925/2.15+7½¢[m]	.....	.....	3.15½/3.90½+10¢[m]	.....	3.15½/3.90½+10¢[m]	.....	3.15½/3.90½+10¢[m]	3.15½/3.90½+10¢[m]	2.97½+10¢[m]	2.13½+10¢[m]
Pittsburgh	2.20+7½¢[n]	2.20+7½¢[n]	2.20+7½¢[n]	2.87½+7½¢[n]	3.20+7½¢[n]	3.27½+7½¢[n]	3.025+7½¢[n]	3.35+7½¢[n]	3.35+7½¢[n]	3.25+7½¢[n]	3.35+7½¢[n]	2.20+7½¢[n]
St. Louis	2.30+7½¢[aaa]	.....	.....	3.325[hh]	3.325[hh]	3.325[hh]	3.325[hh]	3.325[hh]	3.325[hh]	3.325[hh]	2.775[hh]	2.775[hh]
San Francisco	2.32½+10¢[m]	2.32½+10¢[m]	2.465+10¢	3.095+10¢[m]	3.095+10¢[m]	3.095+10¢[m]	3.095+10¢[m]	3.425+10¢[m]	3.425+10¢[m]	3.255+10¢[m]	2.705+10¢[m]	2.425+10¢[m]
Seattle	2.63+7½¢[cc]	2.63+7½¢[cc][d]	2.63+7½¢[cc]	2.78+10¢[m]	2.95+10¢[m]	2.95+10¢[m]	2.95+10¢[m]	3.36+10¢[m]	3.36+10¢[m]	3.10+10¢[m]	2.78+10¢[m]	2.52+10¢[m]
Montreal	1.30+10¢[ff]	1.30+10¢[ff]	1.30+10¢[ff]	1.73+14¢[ff]	1.73+14¢[ff]	1.73+14¢[ff]	1.73+14¢[ff]	1.99+16¢[ff]	1.99+16¢[ff]	1.73+14¢[ff]	1.80+15¢[ff]	1.60+15¢[ff]
Toronto	1.47+6¢[ff]	1.45+6¢[ff]	1.65+7¢[ff]	1.90+8¢[ff]	2.00+10¢[ff]	2.00+10¢[ff]	1.90+8¢[ff]	2.50+16¢[ff]	2.50+16¢[ff]	.....	2.05+8¢[ff]	2.05+8¢[ff]

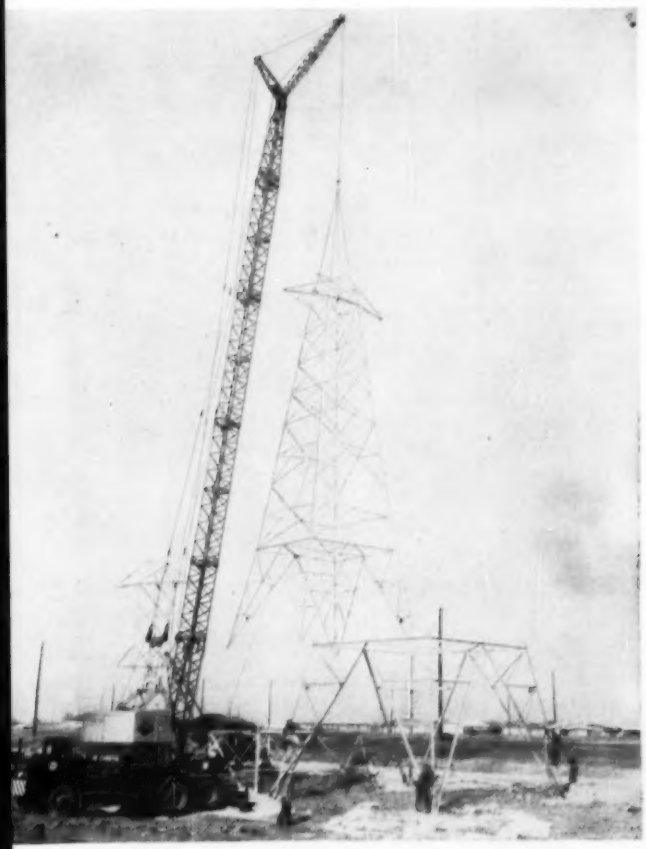
[a] 5¢ /hr HWF [b] lower rates, straight time, other broken [c] 2-axle; 10-wheel $2.25; Euclid $2.45 [d] Intermediate [e] bldg constr; highway $2.55+7¢ WF [f] less than 2-1 [j] plus $2 pd by employer for hosp. death benefits to family [k] bldg constr; steel constr $3.475 [l] higher rates are union, other taken from min wage scale approved by County Commissioners Court [m] 10¢ H&WF. [n] flatbed [o] under 10 cy [p] over 10 cy [q] over 50 hp [r] blade grader [s] single [u] 7½¢ HWF [x] cat oper [y] up to 3½ cy [z] 3½ cy & over [aa] plus W & PF [bb] 3% WF, 2% PF, 11 PH [cc] 4% WF & 4% PF [dd] up to 5 cy [ee] 5 cy & over [ff] over 1½ T but not over 3 [gg] up to 5 tons [hh] excavating [ii] 4% VP [kk] 7½¢ WF included in base pay [ll] 8% fringe benefits [mm] 10¢ H & WF, 10¢ insurance [nn] 8 cy or less; 8-16 cy $2.90; 16-25 cy $3.15 [oo] Plus $2.25/wk WF [rr] 12¢ WF [ss] 5% WF.

MEXICO CITY PRICES

In Pesos, F.o.b. City		July '56	Aug. '56
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Skilled Labor Wages			
Carpenters (8 hr. day) 1 el.	av. per hr.	2.48	2.48
Bricklayers (8 hr. day) 1 el.	av. per hr.	2.48	2.48
Struct. Iron Workers (8 hr. day)..... Remachadores.	av. per hr.	3.77	3.77
Struct. Steel, Shapes		July '56	Aug. '56
3"-15" x 12 meters.....per metric ton		2100.00[f]	2100.00[f]
[f] fob Monterrey			
Reinf. Steel, Corr. Rods			
½" x 11 meters	per ton	1865.00	1825.00
⅝" x 11 meters	per ton	1865.00	1800.00
¾" x 11 meters	per ton	1865.00	1800.00
⅞" x 11 meters	per ton	1865.00	1800.00
1" x 11 meters	per ton	1865.00	1800.00
1" x 11 meters	per ton	1865.00	1800.00

Gravel truck load at 3½ cu. meters		July '56	Aug. '56
Blue Gravel	per tr. load	70.00	75.00
Rose Gravel	per tr. load	65.00	69.00
Cement, Std. Port. (Tolteca)	per ton	230.00	240.00
Lumber			
1" Pine	per M ft.	1750.00	1825.00
1½" Pine	per M ft.	1850.00	1900.00

"Our **LIMA** Truck Cranes give us fast, smooth, precise lifts on every job"



says F. S. Oldt Co., Dallas

"Our Lima truck cranes give us fast, smooth, precise lifts on every job . . . from erecting the 'Ole Man Texas' figure at the State Fair (above left) to standard erecting jobs like the 100 ft. tower (left)." That's the report from F. S. Oldt Company, Dallas, Texas.

They continue: "Truck mounted, the cranes move from job to job fast. Performance is tops, and downtime far below average. That kind of service has kept us coming back for more since 1945. Now we have six Limas . . . the two truck cranes (one Type 44 and one Type 34) plus four crawler mounted Type 34s."

Like F. S. Oldt Company, *you* can rely on Lima's quality design and construction to give you top service for every job. It will pay you to get the full story on Lima quality today. See your nearby Lima distributor or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA SHOVELS · CRANES · DRAGLINES · PULLSHOVELS

BALDWIN-LIMA-HAMILTON

Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. FELIX, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

Conn., Bloomfield—SCHOOL—BA 10/9—Town, School Bldg. Comn., Town Hall, Wintonbury Elementary School. $500,000. Plans deposit $50. Extended date. Jeter & Cook, 36 Pearl St., Hartford, archts. Robt. W. Loomis, 32 Maple Ave., Windsor, engr. CD 4/4.

Conn., East Hartford—HOUSING—BA 10/9—East Hartford Housing Auth., 70 Cannon Rd., Proj. MR-5B, moderate rental housing. $605,000. Plans deposit $25. Kane & Fairchild, 734 Asylum Ave., Hartford, archt. John P. Legnos, 30 Gillett St., Hartford, engr.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW HAMPSHIRE**—Dpt. P. Wks. & Hys., Concord, **Frank Palazzi & Sons, Inc.**, 2321 Hartford Ave., Johnston, R. I., LB $1,342,951, 2¾ mi. road mix hy., five bridges, Sapulding Turnpike, Rochester. Bids Sept. 13. CD 9/6.

† **Manchester Sand & Gravel & Cement Co. Inc.**, Pine Hill St., Hooksett, N. H., LB $591,641, est. $850,000-$959,000, airfield pavements, roads, parking areas and utilities, Grenier Air Force Base, ENG-19-616-56-41. MANCHESTER, N. H. U. S. Eng., 150 Causeway St., Boston, Mass. Whitman & Howard, Inc., 89 Broad St., Boston, Mass., engrs. Bids Sept. 13. CD 8/27.

BUILDINGS—LB & CA

J. G. Roy & Sons Co., 21 Silver St., Springfield, Mass., LB $496,861. ELEMENTARY SCHOOL, South St., AGAWAM, MASS. Town Elementary School Bldg. Comn., 100 Main St., Agawam, Mass. Bids Sept. 7. CD 8/28.

▲ **A & A Allen Constr. Co., Inc.**, 330 Rutherford Ave., Charlestown, Mass. CA Approx. $1,500,000. mechanical off-street GARAGE, Hayward Place, Harrison Ave. Exten. and Norfolk Place, BOSTON, MASS. City, Real Property Bd., City Hall Annex, Boston, Mass. William Nelson Jacobs Assoc., Inc., 316 Stuart St., Boston, Mass., archt. CD 8/27, under LB.

▲ **Code Realty, Inc.**, 31 Milk St., Boston, Mass. CA $2,400,000. construct and finance leasing public PARKING FACILITY, Hayward Place, Harrison Ave., Norfolk Place, BOSTON, MASS. City, Real Property Bd., City Hall Annex, Boston, Mass. Bids Aug. 23. CD 7/19.

J. L. Marshall & Sons, Inc., 560 York Ave., Pawtucket, R. I., LB $660,737, est. $650,000. JUNIOR HIGH SCHOOL, DUDLEY, MASS. Town, School Dpt., Dudley, Mass. Bids Sept. 7. CD 8/24.

Brick & Concrete Constr. Corp., 501 High St., Dedham, Mass. LB $509,000, est. $515,000. Franklin SCHOOL, addn., alterations, LEXINGTON, MASS. Town, Franklin School addn., Bldg. Comn., c/o Supt. Schools, 1475 Mass. Ave., Lexington, Mass. Bids Sept. 11. CD 8/22.

Singleton Constr. Corp., Pleasantville Ave., Tyngsboro, Mass. LB $389,800. PAROCHIAL SCHOOL and CENTER, Worthen St. and Broadway, LOWELL, MASS. Hellenic Orthodox Church, Holy Trinity, Lewis St., Lowell, Mass. Perley F. Gilbert & Assoc., Inc., Sun Bldg., Lowell, Mass., archt. CD 8/21/53.

▲ **Sciaba & Co., Inc.**, 86 Shawmut Ave., Boston, Mass. LB $1,284,400. William F. Pollard JUNIOR HIGH SCHOOL, NEEDHAM, MASS. Town, Supt. Schools, 1330 Highland Ave., Needham, Mass. Bids Sept. 13. CD 8/15.

Lorello & Nascarato, Inc., 3 E. Main St., Mystick, Conn., CA $641,500. JUNIOR-SENIOR HIGH SCHOOL and existing bldg. alterations, Sam Tooker Farm, OLD LYME, CONN. Town Bd. Educ., Town Hall, Old Lyme, Conn. Bids Aug. 21. CD 8/28, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

Md., Towson—SCHOOL—BA 10/2—Baltimore Co. Bd. Educ., Aigburth Rd., 1 story, brick, steel, concrete Elmwood Elementary School, Baltimore. $600,000. Plans deposit $40, Wrenn, Lewis & Jencks, 113 W. Mulberry St., Baltimore, Zone 1, archts. CD 3/30/55.

▲ **N. Y., New York**—HOUSING—BA 10/2—New York City Housing Auth., 299 Broadway, Zone 7, (1) foundations and appurtenances (2) general constr. (3) foundations and general constr. (4) heating and ventilating (5) electric work (6) plumbing; and furnish, install elevators for Mill Brook Houses (Proj. No. NYS-65) Sect. II, incl. Bldgs. Nos. 1 to 4 inclusive, incl. Children's Center in Bldg. No. 3 and Community Center in Bldg. No. 4 located in area bounded generally by E. 137 St., St. Anns Ave., E. 135 St. and Brook Ave., Bronx Boro. Plans deposit $75, $25 for elevators. Extended date. CD 8/24.

▲ **N. J., Annandale**—SCHOOL EXPANSION—BA 12/4—Bd. Educ., North Hunterdon Regional High School Dist., Annandale, school expansion, $1,500,000. Frederick Elsasser, 2013 Morris Ave., Union, archt. Malcolm Runyon, 20 Fulton St., Newark, engr. CD 4/2.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—John W. Johnson, state supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany.

N. Y.—Horn Constr. Co., Inc., 2174 Hewlett Ave., Merrick, N. Y. LB $689,994. (3 bidders) constr. grade crossing elimination structure and approaches to carry 0.22 mi. sect. of Rte. 110 under Main Line Branch of Long Island R.R. near East Farmingdale in Suffolk Co., Bids Sept. 13.

N. Y.—received no bids Sept. 13, seven-span 840 ft. long welded plate girder bridge and approaches incl. interchange facilities, over Grass River in Massena, connecting Center St. with Parker Ave., involving 1.24 mi., St. Lawrence Co., est. $2,420,000. CD 8/17.

▲ **NEW YORK**—John W. Johnson, state supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany.

N. Y.—Del Balso Constr. Corp., 500 Zerega Ave., New York, N. Y., LB $5,950,556. (3 bidders) constr. 0.78 mi. depressed portion of new six-lane divided Prospect Expressway between Fifth and Tenth Aves. in Brooklyn, 1.63 mi. of access roads, Kings Co.;

N. Y.—D. W. Winkelman Co., Inc., 205 Harrison St., Syracuse, N. Y. LB $5,721,391. (2 bidders) completion of paving, structural work on State Fair Blvd. and northwest Arterial Connection (Rte. 48) along west side of Lake Onondaga between Hiawatha Blvd. and State Thruway, Onondaga Co.;

N. Y.—Muir-Woodcock, Landscapers, Ridgefield, Conn. LB $207,606. (1 bidder) landscaping work along 7.33 mi. sect. of Major Deegan Expressway in Bronx between 138 St. and city line, Bronx Co.;

N. Y.—H. L. Baughman, Inc., 1240 Jefferson Rd., Rochester, N. Y. LB $1,090,312. (5 bidders) constr. 0.46 mi. portion of four-lane divided Rte. 17, and 0.7 mi. of access roads, near intersection of Tuttle Ave. and E. Water St. in Elmira, Chemung Co.;

N. Y.—John C. Peterson Constr. Corp., 958 Church St., Baldwin, N. Y. LB $207,711. (6 bidders) fencing, screen planting, drainage work and misc. constr. along portions of Northern, Sagtikes, Captree, Southern and Wantagh State Parkways, Nassau and Suffolk Counties;

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

N. Y.—Draicchio & Caradori Constr. Co., Inc., 3 Lombardy St., Lancaster, N. Y. LB $1,777,641. (1 bidder) relocation, reconstr. 3.99 mi. sect. of Rte. 14A adjacent to and through village of Penn Yan, reconstr. 0.67 mi. sect. of Rte. 54 in village, Yates Co.;

N. Y.—S & S Constr. Co., South Fallsburg, N. Y. LB $169,258. (1 bidder) installing of sanitary sewer line along Main and Bridge Sts. in Margaretville, starting at Fair Street intersection and exten. northeastward along Main St. (Rte. 28) to Bridge St., then southeastward on Bridge St. (Rte. 30) to Delaware River Bridge, distance 0.48 mi. Delaware Co.;

N. Y.—City Constr. Co., 640 Jay St., Utica, N. Y. LB $316,982. (1 bidder) reconstr. Uebler Rd. 2.89 mi. north-south secondary road connecting county roads 180 and 163 in town of Schuyler east of Utica, Herkimer Co.;

N. Y.—received no bids Sept. 13, installing traffic signal system along 5.13 mi. sect. of Massena's South Side arterial route (Rte. 37) from Rte. 56 intersection northeastward to Robinson Tunnel, St. Lawrence Co., est. $73,000. CD 8/17.

D'Amico & Guerriero Inc., 479A Hempstead Turnpike, Elmont, N. Y. LB $215,236. (8 bidders) storm and sanitary sewers in Flatbush Ave. west side from Ave. P to Ave. U and a combined sewer in Flatbush Ave. west side from Flatlands Ave. to Ave. P, BROOKLYN, N. Y. President Brooklyn Boro, Boro Hall, Brooklyn 1, N. Y. Bids Sept. 11. CD 9/5.

▲ **General Electric Co.**, 1 River Rd., Schenectady, N. Y. LB $2,462,933. furnishing, installing main power equip. for Third Avenue sub-station, N. Y. City Transit System, Contr. P-172, BROOKLYN, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn, N. Y. Bids Sept. 7. CD 8/2.

▲ **W. J. Barney Corp.**, 101 Park Ave., New York 17, N. Y. LB $2,658,850. transit shed for Pier No. 11 at Atlantic Basin, Contr. BP-120.002, BROOKLYN, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Sept. 5. CD 8/2.

Hydro Constr. Corp., 513 Lafayette Ave., Buffalo, N. Y. LB $418,000. control and service center, Cheektowaga, BUFFALO, N. Y. Erie County Water Auth., Ellicott Square Bldg., Buffalo, N. Y. CD 12/20/5.

H. L. Baughman, Inc., Henrietta, N. Y. CA $450,000. expansion of uncompleted sewage treatment plant, HENRIETTA, N. Y. Henrietta Town Bd., Henrietta, N. Y. Bids Sept. 14. CD 9/7.

▲ **Tufano Contg. Co.**, 32-17 Lawrence St., Flushing, N. Y. CA $1,258,587. three parking areas to handle cars in "Terminal City", New York International Airport, IDLEWILD, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. CD 9/5, under LB.

Underpinning & Foundation Co., Inc., 155 E. 44 St., New York 17, N. Y. LB $53,650. (3 bidders) Contr. No. 145C, test piles, in connection with constr. of Harlem River Dr. from W. 145 St. to W. 153 St., NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York 7, N. Y. Bids Sept. 10. CD 9/4.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Md.—Nello L. Teer Co., Durham, N. C. LB $3,335,199 (3 bidders) surf. 8.431 mi. dual hy., Baltimore Co. Beltway Wilkens Ave. to U. S. 40 incl. 4-span railroad bridge, Contr. B 635-12-420, Baltimore Co.;

Md.—Contee Sand & Gravel Co., Laurel, Md. LB $246,141 (4 bidders) wid'n., resurf. Main St. Laurel to R. I. Ave. and U.S. 1, 6.61 mi., Contr. P 738-5-320, Prince Georges Co. Bids Sept. 11. CD 8/27.

BUILDINGS—LB & CA

Salvatore Leccese, 106 McNaughton St., Rochester, N. Y. LB $618,481. (8 bidders) general constr. SCHOOL, ALEXANDER, N. Y. Central School Dist., Alexander, N. Y. Bids Sept. 11. CD 9/5.

▲ **Nicholas Coblis & Sons**, Geneva, N. Y. LB $1,297,294. imprvs., addns. to several grade and one high SCHOOL, NEWARK, N. Y. Bd. Educ., Newark, N. Y.

John Banas, 1510 Fox Place, Utica, N. Y., and Robert Williams, RD 1, Trenton Rd., Utica, N. Y. Own Forces. $432,500. 35 HOMES, NORTH UTICA, N. Y.

▲ **Ingalls Industries**, 620 Fourth Ave. S., Birmingham, N. Y. CA $3,000,000. furnish, erect 7,000 tons structural steel at Indian Point A-Reactor PLANT, PEEKSKILL, N. Y. Consolidated Edison Co. of New York, Inc., 4 Irving Pl., New York 3, N. Y. CD 3/9/55, under CA.

▲ **Abe Shames & Jim Marcone**, c/o Irving Hirshman, archt., 230 W. 13 St., New York 3, N. Y. Owner Builds. $1,000,000. INDUSTRIAL CENTER on 26 acre tract on Brush Hollow Rd., to incl. vocational school and Medical Services Bldg., WESTBURY, N. Y. Factories to be occupied by Stanat Mfg. Co., Westbury Electronics and Lane-Murray Corp. CD 3/27.

F & C Haerter Co., 257 Hemlock Terrace, Teaneck, N. J., CA, $400,000, renovating 3 and 4 floors of east HOSPITAL WING, ENGLEWOOD, N. J. Bd. Trustees Englewood Hospital, Engle St., Englewood, N. J. Lawrence Licht, 19 Knickerbocker Rd., Englewood, N. J., archt. Awarded Sept. 10.

(Continued on page 80)

"WEATHER-PROOF" YOUR PUBLIC WORKS WITH STEEL PIPE SNOW AND ICE MELTING!

No "traffic" handling public works of the future will be really modern without provision for "automatic" removal of snow and ice!

Pedestrian, vehicular, or airborne, it doesn't matter . . . the increasing volume and peak load conditions imposed by today's and tomorrow's traffic, demand uninhibited "flow" at *all* times.

So it is that public planners and engineers are turning to steel pipe snow and ice melting systems for such great projects as in the ramp and stairway of the Staten Island Ferry Building, the Indiana Turnpike interchanges, the sidewalks around great new buildings, on bridge floors, airports, congested city street crossings, elevated approaches and ramps.

Steel Pipe is first choice for these installations because its known economy makes investment in "automatic" melting economically practical. Add the advantages of formability, workability, weldability and reliability and you know why steel pipe is the most widely used in the world . . . for snow melting, radiant heating, plumbing, fire sprinkler systems, power, steam and air transmission.

Send for the free 32 page booklet "Steel Pipe Snow Melting and Ice Removal Systems"

Even the open stairway of the Staten Island Ferry Building is "snowless" . . . each step-tread concealing one length of 1" steel pipe to melt snow and ice.

Steel Pipe is First Choice

Committee on

STEEL PIPE RESEARCH

AMERICAN IRON AND STEEL INSTITUTE

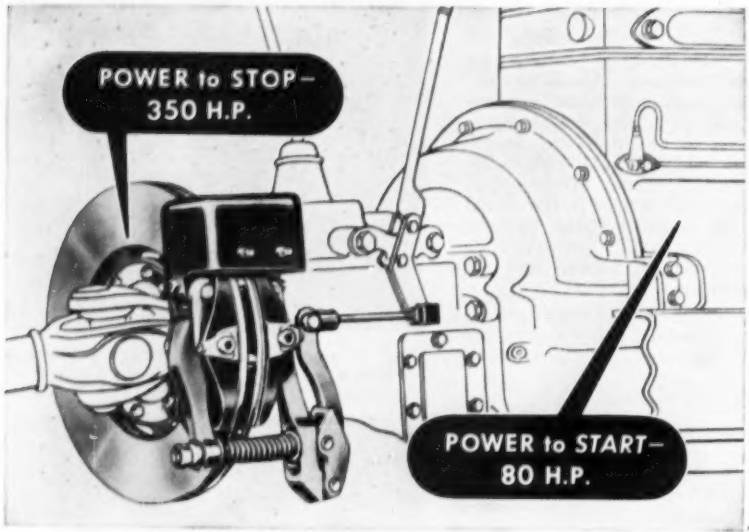
150 East Forty-Second Street, New York 17, N.Y.

an ACCO product

It pays to specify

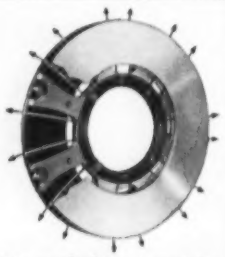
Tru-Stop Brakes

FOR LONG LIFE—EASY SERVICE



Have the surplus braking power emergency service requires

• In terms of horsepower, brakes actually do more work than the engine. For example:



Air-cooled for Long Life

• The terrific heat generated in braking shortens lining life. TRU-STOP design quickly dissipates this heat. Most of the disc is exposed to the air even during braking. And a jet of cooling air circulates between the disc blades and carries off heat.

Where it takes 80 H.P. to accelerate to 20 miles per hour, 350 H.P. is required to make a safe stop at that speed within required limits.

TRU-STOP Emergency Brakes have the surplus braking power required for emergency service. That is why they are more adequate for use as parking brakes.

TRU-STOP Brakes lower service costs, too. Relining or adjustment is a simple job for any mechanic with ordinary tools. It is not necessary to drop the drive shaft.

Specify TRU-STOPS for factory installation on the next vehicle you buy. Send for your copy of this booklet —the complete story of TRU-STOP Brakes.

ACCO

TRADE MARK

Automotive and Aircraft Division
AMERICAN CHAIN & CABLE

601 Stephenson Bldg., Detroit 2
2216 South Garfield Ave., Los Angeles 22 • Bridgeport 2, Conn.

(Continued from page 78)

▲ **S & Z Construction Co.**, Rt. 9 and Hy. 19, New Brunswick, N. J. Owner Builds. $1,400,000. 95 HOMES, Green Grove Rd., Neptune-by-the-Sea, NEPTUNE, N. J. J. W. Hilton, 28 Oak Crest Rd., West Orange, N. ., archt.

▲ **Gushin & Okin Associates**, 210 Haverford St., New Brunswick, N. J. Owner Builds. $3,000,000. 176 HOUSES, to be known as "Lynn Oaks", New Dover Rd. Colonia Section of NEW BRUNSWICK, N. J. Gerber & Camapania, 11 Commerce St., Newark, N. J., archts.

▲ **Joseph Karp**, 45 Harding Dr., East Orange, N. J., Owner Builds. $1,138,830. 77 HOMES near Woodbridge Circle to be known as "Hearthstone Homes", WOODBRIDGE, N. J. Erwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **Marshall & Raymond Sachs**, c/o Thomas Carr, archt., 479 Brace Ave., Perth Amboy, N. J. Owner Builds. $2,500,000. 128 HOUSES in Jordan Woods Section, WOODBRIDGE, N. J. .

▲ **Williard, Inc.**, Germantown and Sedgley Ave., Phila., Pa. LB $1,212,000. heating, ventilation and air-conditioning phases for Commonwealth OFFICE, PHILA., PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Sept. 12. CD 8/28.

Atlas Contractors of Md., 2629 E. Cold Spring Lane, Baltimore 14, Md. LB $517,977, est. $470,000. (2 bidders) brick, concrete, steel Cyburn HOME (for children), 2201 Cold Spring Lane, BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Sept. 13. CD 9/5.

▲ **Hageman & Harris, Inc.**, 2415 Virginia Ave. N.W., Wash., D. C., LB $2,445,175, est. $2,000,000 (6 bidders) HEADQUARTERS BLDG., Wisconsin Ave. N.W. WASH., D. C. Equitable Life Insurance Co., 816 14 St. N.W., Wash., D. C. Bids Sept 13 CD 8/30

SOUTH

BUILDINGS—BA

▲ **La., New Orleans**—LIBRARY—BA 10/16—City Purch. Division, 302 City Hall, 2 story, 135,000 sq. ft. glass, concrete downtown library, Loyola and Tulane Aves. $2,200,000. Plans deposit $150. Curtis & Davis, 338 Baronne St., and Goldstein, Parham & Labouisse, 811 American Bank Bldg., archts. CD 3/13.

▲ **Ky., Fort Knox**—HOUSING—BA 11/8—U. S. Eng., 830 W. Broadway, Louisville, construct and finance 2,042 family housing units, (Capehart), ENG-15-029-56-87. $30,000,000. Warren & Van Praag & Assoc., 253 S. Park St., Decatur, Ill., archts. CD 8/20.

Ga., Americus—HOUSING—BA 2/5—Americus Housing Auth., 40 housing units. $400,000. Abreu & Robeson, Inc., 141 Walton St., Atlanta, archts. CD 4/15/53.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Richmond-Petersburg Turnpike Auth., 1015 S. Main St., Richmond,

T. A. Loving & Co., P. O. Box 1291, Goldsboro, N. C. CA $1,150,870. Contr. B-2-SUB. Sect. B, substructure, north for the James River, Bridge, City of Richmond. Bids Aug. 28. CD 9/4, under LB.

† **Reid & Hope**, P.O. Box 828, Suffolk, Va. LB $302,477. (13 bidders) chapel, Naval Air Station, NOy 91350, Spec. 48280, OCEANA, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Sept. 11. CD 8/15.

▲† **Arundel Corp.**, Pier 2 Pratt St., Baltimore, Md., **L. E. Dixon Co.**, 409 S. California St., San Gabriel, Calif., and **Hunkin-Conkey Constr. Co.**, 1740 E 12 St., Cleveland, O., LB $16,015,785. dam, Sutton Reservoir Proj., Elk River, Serial No. CIVENG-46-022-57-4, WEST VIRGINIA. U. S. Eng., 237 Fourth Ave., Huntington, W. Va. Bids Sept. 13. CD 8/6.

NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh,

Wannamaker & Wells, Inc., Box 542, Orangeburg, S. C. CA $701,689, grading and structure 0.642 mi. US 701. Proj. No. 3083. SF-244 (6), Bladen Co. Bids Aug. 28, awarded Sept. 12. CD 9/4, under LB.

▲ **Rea Constr. Co.**, Pineville Rd., Charlotte, N. C. CA $3,575,000. Hoskins Filtration plant, CHARLOTTE, N. C., City, City Hall, Charlotte, N. C. Bids Aug. 31. CD 9/14, under LB.

▲† **McWilliams Dredging Co.**, Box 584, New Orleans, La. LB $2,316,860 (4 bidders) Old River control, outflow channel dredging consist g of 13,400,000 cu. yd., Concordia Parish, Inv. 57-31, LOUISIANA, U. S. Eng., foot of Prytania St., New Orleans, La. Bids Sept. 5. CD 8/27.

▲ **Clark Constr. Co.**, 1919 Parrish Ave., Owensboro, Ky. CA $1,004,022 (4 bidders) Contr. B, 3 pumping stations, 1,800, 2,400 and 900 gals. per minute, OWENSBORO KY. City, Owensboro, Ky. Bids Aug. 21, awarded Sept. 11. Grand total $2,385,107. CD 8/27, under LB.

Markwell & Hartz, P. O. Box 6225, Memphis, Tenn. CA $754,405 (6 bidders) Alt. A, Contr. A, sewage treatment plant 7.5 m.g.d. (Owensboro, Ky.);
Roy Ryan Constr. Co., 800 E. Michigan Ave., Evansville, Ind. CA $626,680 (4 bidders) Contr. C, sewer lines, (Owensboro, Ky.).

† **Office of Contracting Officer**, Patrick Air Force Base, Cocoa, Fla., rejected bids Aug. 9, relocation, modification of Ramjet facility, Bldg. 1345, Cape Canaveral Auxiliary Air Force Base, CAPE CANAVERAL AUXILIARY AIR FORCE BASE, FLA. CD 8/2.

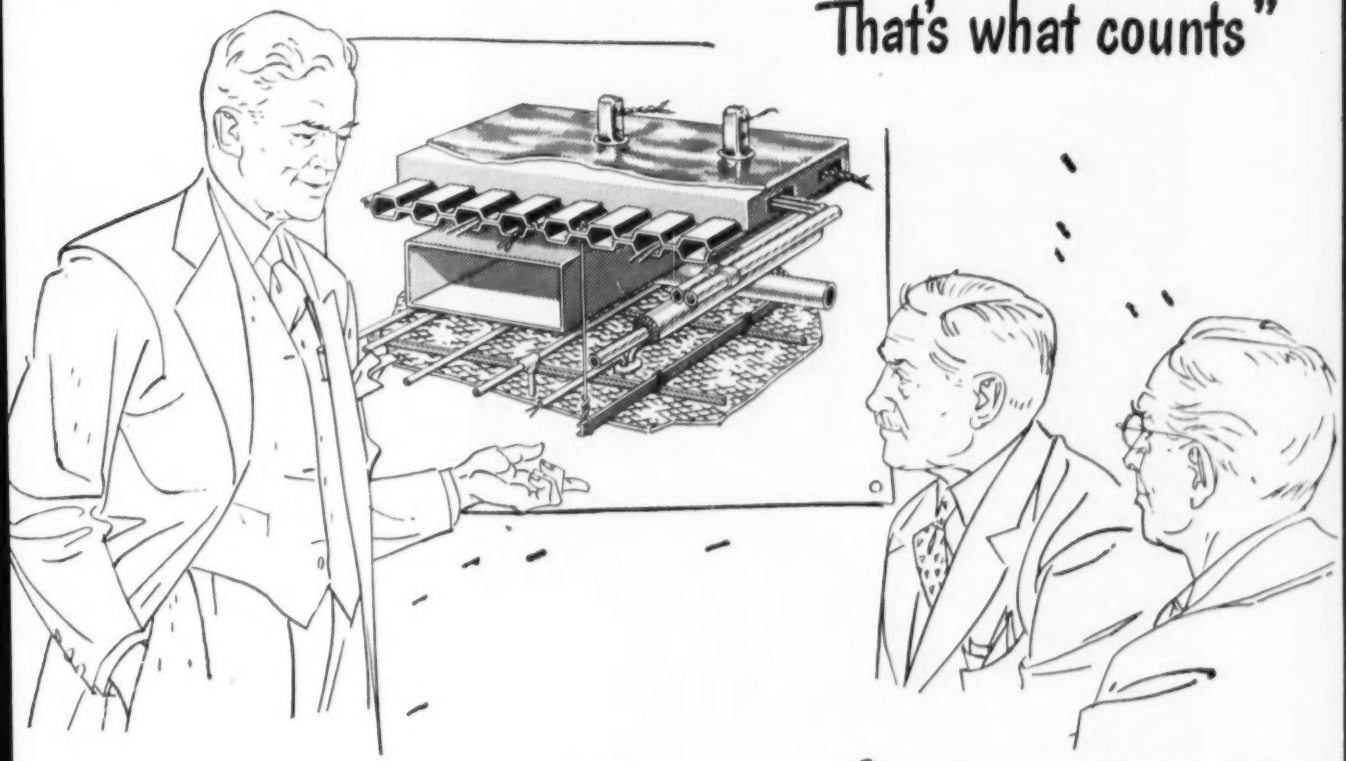
BUILDINGS—LB & CA

Virginia Engineering Co., Inc., 80 29th St., Newport News, Va. LB $545,500. SERVICE BLDG., altera-

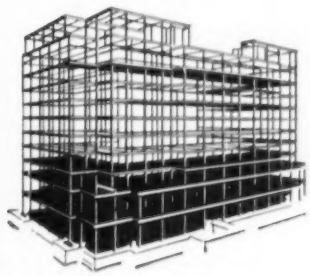
(Continued on page 82)

ASKED HOW SOON THE BUILDING COULD START, THE CONTRACTOR SAID,

"Steel construction gives a quicker finish date, That's what counts"



"Even if structural steel is tight, you have to allow time for demolition and excavation. By then the steel is ready. Todays finest buildings are being built with steel Q-Floors. They are the load-carrying members. The use of Q-Floors alone reduces construction time 20 to 30%.

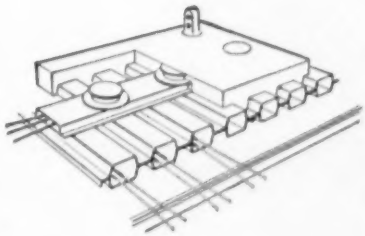


"You get a much quicker completion date. That's what decides how soon you can begin making money from your investment. Q-Floors go in fast —two men can lay 32 sq. ft. in half a minute. And construction is dry; no forms, falsework, or wet materials to hold back work. No fire hazard. Dry construction accounts for the 20 to 30% saving in time.

"Cost? Q-Floors cost less than the carpet to cover them! At most, the floor is always a small fraction of total cost, and yet the floors are what a building is for.

"You're making an investment for forty or fifty years. Q-Floors protect your investment over the decades against electrical obsolescence.

"Look at this picture of a section through the floor of a modern Q-Floor building. Suspended ceiling and all the building's mechanical equipment arteries are visualized in a condensed form. Steel Q-Floor cells are crossed over by headers. These carry wires for every



conceivable electrical service. An outlet can be established on every six-inch area, exactly where needed. The outlet calls for only a small hole. Takes actually a few minutes. No trench to dig. No muss or fuss. The entire building is protected against electrical obsolescence. Any number of new business machines can be introduced. Tenants can have as many changes, as fast as they want."

Write for the complete story—

Q-Floor*

*The original cellular steel floor . . since 1930 over 12,500 installations

H. H. Robertson Company

2420 Farmers Bank Building • Pittsburgh 22, Pennsylvania

In England—Robertson Thain Ltd., Ellesmere Port, Cheshire
In Canada—Robertson-Irwin Ltd., Hamilton, Ontario

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____ CITY _____

MOVABLE SIDING FOLLOWS THE FACE

another
ENGINEERING ACHIEVEMENT
by WEST VIRGINIA
Track Specialists

West Virginia's track engineers called on 33 years of experience in designing the extra heavy duty movable siding used in constructing the Delaware River Aquaduct.

This 210 foot siding is designed to slide smoothly over the main track, following the work at the tunnel's face. Maneuverability is coupled with the extreme strength needed to withstand the weight of thousands of tons of muck hauled from the face daily. The specially designed narrow bypass is also a West Virginia achievement.

ENGINEERING SERVICE
throughout the world of TRACK

In this, and other special installations, West Virginia engineers were asked to work with the contractor's engineers prior to the contract award. This blend of practical experience with engineering experience has met the specific, exacting requirements needed for industrial track installations throughout the world.

Write or Call for Free Engineering Service

Delaware River Aqueduct
(Connonsville, N. Y.
Contractors)
Johnson, Drake and Piper, Inc.
Slack-Callahan Construction Co.
Winston Brothers Co.
TECON Corp. - Conduit & Foundation Corp.

TRACK BY W. VA. OF COURSE

West Virginia STEEL & MFG. CO.

west virginia steel
and MANUFACTURING COMPANY
P. O. Box 316 HUNTINGTON, WEST VIRGINIA

IMPORT GRAY PORTLAND
CEMENT
Guaranteed to meet ASTM C-150-53 Type 1 Specifications. Also import Clinker Cement
Phone or Write for Quotations
ESTABLISHED 1873
Woodward & Dickerson Inc.
1400 SOUTH PENN SQUARE • PHILADELPHIA 2, PA., U. S. A.
Cable Address: "Woodward" Telephone: LOcust 4-5600 *Teletype: PH 109*

(Continued from page 80)

tions, addns., Princess Anne Rd. and Buzzards Neck Rd., NORFOLK, VA. Sears Roebuck & Co., 201 W. 21 St., Norfolk, Va. F. E. Davidson, 675 Ponce de Leon Ave., Atlanta 6, Ga., archt.

▲ **Southeastern Constr. Co.**, 1600 McCorkle Ave., Charleston, W. Va., CA $2,180,000. OPERATING CENTER and other structures on 60-acre tract on Kanawha River near ST. ALBANY, W. VA. New York Life Insurance Co., United Fuel Gas Co., lessee, 1033 Quarrier St., Charleston, W. Va. Bids Sept. 6. CD 8/28.

▲ **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C., CA $16,016,541, construct and finance 1,216 HOUSING UNITS (Capehart), FORT BRAGG, N. C. U. S. Eng., 308 Custom house, Wilmington, N. C. CD 8/2, under LB.

▲ **Jones Bros. & Co.**, Wilson, N. C., LB $1,658,900 four SCHOOLS, WILSON N. C. City Wilson, N. C. Bids Sept. 6. CD 8/6.

Richard S. Flink Constr. Co., 125 North Shore Dr., Normandy Isle, Miami Beach, Fla., CA $400,000 Base Bid, MOTEL addns., alterations, S. Dixie Hy. and Alhambra Circle, CORAL GABLES, FLA. University Courts Motel, c/o Houston-Ferguson, archts., 4035 Ponce de Leon Blvd., Coral Gables, Fla. Bids Aug. 15. CD 8/22, under LB.

▲ **Cole Building Corp.**, 924 Lincoln Rd., Miami Beach, Fla., Owner Builds. $1,000,000. 100-unit MOTEL, between 30 and 31 Sts., on Biscayne Blvd. MIAMI, FLA. Melvin Grossman, 311 Lincoln Rd., Miami Beach, Fla., archt.

Lionel Favret, 937 Gravier St., New Orleans, La. LB $487,700. 3 story, brick, rein.-con. 30,600 sq. ft. ELEMENTARY SCHOOL, 3 story, rein.-con., brick CONVENT, NEW ORLEANS, LA. Congregation of St. Dominic's R. C. Church, Memphis and Harrison Aves., New Orleans, La. Bids Sept. 7. CD 8/24.

Tudor Constr. Co., Box 1232, Alexandria, La., CA $541,262 (4 bidders) 3 story boys' DORMITORY, 3 story girls' DORMITORY addn., PINEVILLE, LA. Louisiana College, Dr. G. Earl Guinn, Pineville, La. Bids Sept. 5. CD 8/3.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† **Illinois**—BA 10/19—U. S. Eng., 420 Locust St., St. Louis 2, Mo., constr. uncompleted section of dam for Devil's Kitchen Dam Proj., Williamson Co., Crab Orchard Federal Wild Life Refuge area, CIVENG-23-065-57-25.

BUILDINGS—BA

▲ **Ill., Chicago**—HOSPITAL—BA 10/2—Wesley Memorial Hospital, 250 E. Superior St., superstructure 10 story dormitory and 5 story hospital addn., brick, concrete U shaped annex, $5,500,000. Fugard, Burt, Wilkinson & Orth, 520 N. Michigan Ave., archt.

Ind., Terre Haute—VOCATIONAL-EDUCATIONAL—BA 10/2—State Teachers College Rd., Indiana State Teachers College, Terre Haute, remodeling vocational-educational bldg. $450,000. Yeager Architects, Inc., 822 Ohio St., archt.

Ind., Rochester—SCHOOL— BA 10/3—Rochester School Twp., Bldg. Corp., State Rd., school-grade, 1¼ mi. west. Plans deposit $25. Hamilton & Graham, 411 Western Reserve Bldg., Muncie, archts. CD 7/26/54.

Mich., East Detroit—SCHOOL—BA 10/8—Bd. Educ., Floyd H. Hanson, secy., 15500 East Nine Mile Rd., East Detroit High School addn. Plans deposit $75 general constr., $35 mechanical work, $35 electrical work, O'Dell, Hewlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, archts. CD 10/31.

BUILDINGS—SLC

Ind., East Chicago—DIAL EXCHANGE—Illinois Bell Telephone Co., 212 W. Washington St., Chicago, Ill., soon lets contract 2 story, bsmnt., concrete block dial exchange bldg., Chicago and Melville Aves. $500,000. Holabird & Root & Burgee, 180 N. Wabash Ave., Chicago, archts.

HEAVY CONSTRUCTION—LB & CA

Vanguard Constr. Corp., 369 Lexington Ave., New York, N. Y., LB $837,408 (3 bidders) Sect. A, addn. to house rapid sand filters, YOUNGSTOWN, O. Mahoning Valley Sanitary Dist., P. O. Box 298, Youngstown 1, O. Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York 6, N. Y., engrs. Bids Sept. 11. CD 8/2.

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis,

Ind.—**Smith & Johnson Co.**, 1799 Kentucky Ave., Indianapolis, Ind., LB $141,008, est. $154,821. rein.-con. girder type structure over Wagner Ditch and continuous rein.-con. slab type bridge over Little Sugar Creek, U.S. 52, Hancock Co.; LB $224,783, est. $287,006, deck plate girder subway structure under N. Y. C. R.R. on SR 62, Jeffersonville, LB $803,456, est. $919,999, bridge over Fall Creek and culvert over Fall Creek Ditch, S.R. 37, Marion Co.; LB $166,933, est. $141,893. rein.-con. slab bridge on SR 9 over east fork of Lewis Creek; LB $330,423, est. $353,998, rein.-con. arch bridge over Plum Creek; steel beam bridge, continuous steel beam bridge on SR 350 in Ripley Co.;

Ind.—**Rieth-Riley Constr. Co.**, Goshen, Ind., LB $183,149, est. $218,443. three rein.-con. arch-type bridges over Greasy Creek, S.R. 350;

Ind.—**Ryan Constr. Co.**, 800 E. Michigan St., Evansville, Ind., LB $188,273, est. $258,388. 5-span rein.-con. girder and steel beam overhead bridge, S.R. 62, near Evansville;

(Continued on page 84)

CHECK LIST of how a modern truck-crane speeds schedules

Here's a line of advance-design machines that incorporates so many work-speeding advantages that owners have completely revised their existing production standards. In addition to the list of features below, these truck-cranes offer as standard equipment, true power hydraulic controls—Speed-o-Matic, that make the operator's job easy, safe. He gets fast, positive response . . . perfect "feel" for speed with accuracy. Small wonder there's a big swing to Link-Belt Speeder.

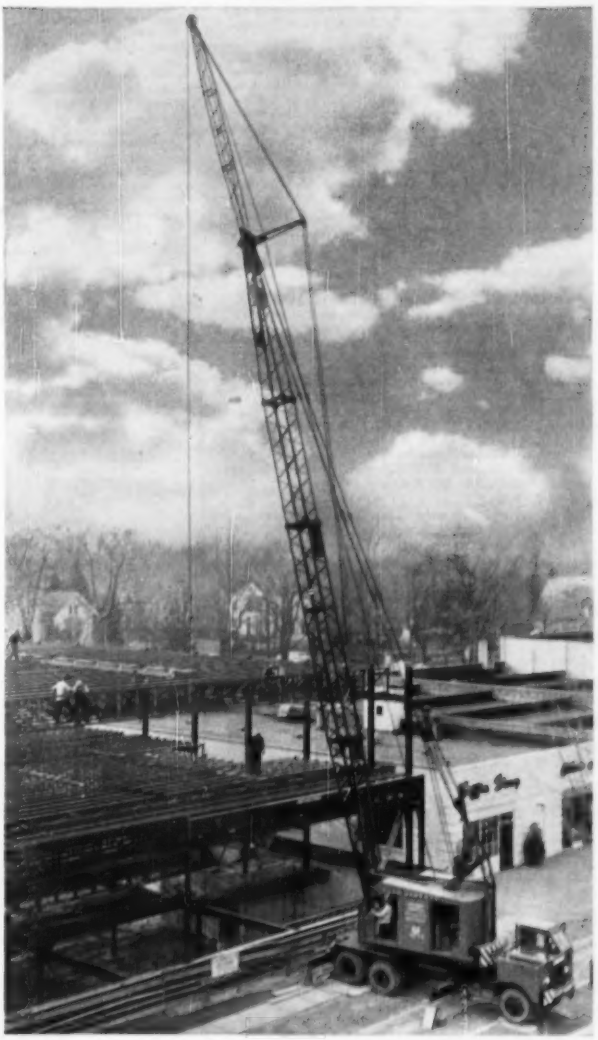
Check all these advantages

- ☐ **LOWERS LOAD UNDER POWER** on main hoist line and jib whip line—result is greater precision and safety. (Reversing clutches are available for either or both main drums).
- ☐ **SELDOM STOPS FOR CLUTCH ADJUSTMENT**—Interchangeable, hydraulically-actuated clutches automatically compensate for heat and normal lining wear.
- ☐ **OFFERS GREATER NET HORSEPOWER**—This adds up to greater line pulls and work capacity. Torque converter units available for all models.
- ☐ **SPEEDS PILEDRIVING OPERATIONS**—All Link-Belt Speeder truck-cranes can be furnished with a third operating drum.
- ☐ **RAISES AND LOWERS BOOM UNDER POWER**—Independent Rapid Boomhoist utilizes Speed-o-Matic clutches for power-raising and power-lowering.
- ☐ **HANDLES HEAVY LOADS AT EXTREME RADII**—Patented retractable high gantry, which can be raised or lowered under power, minimizes stresses on boom and boomhoist cable.
- ☐ **SIMPLIFIES AND SPEEDS CONVERSION**—A Link-Belt Speeder is designed for fast, in-the-field convertibility to any standard attachment. Removable rear outriggers available, plus split laggings for easy removal.
- ☐ **SWINGS SMOOTHLY, QUICKLY**—Conical, hook-type rollers on anti-friction bearings permits "friction-free" swing. Hydraulically actuated swing brake available—especially valuable for long boom operations.
- ☐ **SPEEDS COUNTERWEIGHT ADDITION OR REMOVAL**—Speed-o-Matic hydraulic jacks do the job on the larger models.

For details of these, and many other features contact your distributor or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa. 14.204

LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls



HC-98 Zephyrcrane with 80′ boom and 20′ jib works quickly, spots loads gently, accurately. Operator has clear, up-front visibility.

It's time to compare . . . with LINK-BELT SPEEDER

Five models 12½ to 35-ton capacities with true power-hydraulic control

HC-58	HC-68	HC-88	HC-98	HC-108
12½-ton	17½-ton Remote control available.	25-ton	30-ton	35-ton

(Continued from page 82)

Ind.—**G. H. Allen**, Vincennes, Ind., LB **$91,296**, est. $98,719, continuous steel beam bridge on SR 63 over Turman Creek;

Ind.—**Kahl-Mahan Constr. Co.**, Liberty, Ind., LB **$156,523**, est. $181,941, rein.-con. arch type bridge on SR 44 over Hanna Creek;

Ind.—**Wilbur C. Scheirer Co.**, Frankfort, Ind., LB **$109,188**, est. $109,091, bridge over south fork of Wildcat Creek, Tippecanoe Co. Bids Sept. 11. CD 8/23.

† **Lee Constr. Co., Inc.**, 127 N. Dearborn St., Chicago, Ill., CA **$882,564**, misc. building and structures at Site C-03D, Cook Co., Serial No. ENG-11-032-57-10, ILLINOIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Aug. 14. CD 8/22, under LB.

▲ **Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill., LB **$4,486,050**, Contract 4-B-2, Calumet Skyway Toll Road, comp. structure except structural steel bridges over 87 and Kinston Sts., drainage, paving, toll booths, rest. streets, sewers, north side 87 to Colfax Sts., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Sept. 13. CD 8/23;

J. M. Corbett Co., 2500 S. Corbett St., Chicago, Ill., LB **$3,618,038**. Contract 4-A-2, Calumet Skyway Toll Road, structures except structural steel, bridges over Elliott Ave., 83 St., Jeffery Ave., 85 and 86 Sts., drainage, paving (Chicago, Ill.).

▲ **Crowley Sheppard Asphalt Co.**, Box 144, Maywood, Ill., CA, **$326,797**, bit. paving Western Ave., Sec. 055-2024, near CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. Grand total $1,261,296. CD 2/23;

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., CA, **$312,486**, bit. paving Western Ave., Sec. 055-3336, near here (Chicago, Ill.);

Rock Road Constr. Co., 5915 N. Rogers Ave., Chicago, Ill., CA, **$303,804**, bit paving Western Ave., Sec. 055-2428, near here (Chicago, Ill.);

J. A. Ross & Co., 3147 N. Cicero Ave., Chicago, Ill., CA, **$318,209**, bit. paving Western Ave., Sec. 055-2932, near here (Chicago, Ill.).

States Improvement Co., Inc., 1 N. La Salle St., Chicago 2, Ill., CA, **$232,962**. 2 single span plate girder bridge, 25 Ave. at Roosevelt and I. H. B. R.R., Sec. 020-0606, Broadview, CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. CD 2/23.

▲ **John C. Tully Co.**, 33 N. La Salle St., Chicago, Ill., LB **$1,294,399**, auxiliary outlet sewers Kostner Ave. System, Bloomingdale-Sayre, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Sept. 7. CD 8/16.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,

Mich.—**Brown Brothers**, 3245 W. St. Joseph St., Lansing, Mich. CA **$670,550**, est. $660,000. rein.-con., steel bridge on relocation of M-21 over Grand River, F B2 of 41-1-4 C2-R (F 185 14), Kent Co.;

Mich.—**Louis Garavaglia**, 24240 Mound Rd., Center Line, Mich. CA **$514,571**, est. $570,000. rein.-con., steel bridge on relocation of US-16 over C. & O. RR., IN X1 of 63-13-4 C1-RN (IN 04-4), Oakland Co. CD 8/31, under LB.

MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,

Sargent Constr. Co., 2840 Bay Rd., Saginaw, Mich. CA **$581,039**, est. $650,000. c. conc. 3.49 mi., 22 ft. wid'n. on M-15, F 09071 C1-R (SP 9-11) (F 239 12), Bay Co. CD 9/12, under LB.

J. C. Sachs Contractor, 724 Lafayette Bldg., Detroit 26, Mich. CA **$82,094** Groups 56-4A and 56-5A grading, paving, PW-2730F; PW-2731F, PW-2772F, PW-2773F, PW-2774F, PW-2775F, PW-2778WF, PW-2781F, PW-2782W, DETROIT, MICH. City, M. F. Wagnitz, city engr., 528 City County Bldg., Detroit 26, Mich. Bids Aug. 14, awarded Aug. 28. CD 8/6.

Owen Ames & Kimball Co., 38 Pearl St. N. W., Grand Rapids, Mich. CA **$524,895** sewage treatment plant, Contr. 15, GRAND RAPIDS, MICH. City, Donald M. Oakes, mgr., City Hall, Grand Rapids, Mich. CD 9/6, under LB.

BUILDINGS—LB & CA

▲ **H. G. Christiman Constr. Co.**, 850 Fellows St., South Bend, Ind., LB **$2,207,604**. 2 story HIGH SCHOOL, E. Jefferson and Bittersweet Rds., MISHAWAKA, IND. Penn. Twp. School, 117 Lincolnway E., Mishawaka, Ind. Bids Aug. 22.

LaSalle Constr. Co., 343 S. Dearborn St., Chicago, Ill. CA, **$543,000**. OFFICES addn., CHICAGO, ILL. Borden Co., Tripp and Barry Sts., Chicago, Ill. Rodde Anderson & Novak, 6618 W. Diversey St., Chicago, Ill., archts. Awarded Sept. 1.

▲ **Midway-LaSalle Building Corp.**, c/o 2217 8 St., Peru, Ill., CA, Est. **$2,000,000**. SHOPPING CENTER, incl. multi-floor department store, 80-acre tract State Rte. 51 north of LASALLE, ILL. Midway Plaza Shopping Center, 2217 8 St., Peru, Ill. George L. Bollenbacker, 16 S. State St., Chicago, Ill., archt. CD 8/14.

Van Etten Bros., Builders, 11024 S. Michigan Ave., Chicago, Ill., CA **$300,000** 1 story, brick, 20,000 sq. ft. BOILER HOUSE, 2531 W. 48 St., CHICAGO, ILL. Chicago Tube & Iron Co., 2531 W. 48 St., Chicago, Ill. CD 7/14/52.

R. C. Wieboldt Co., 1515 Church St., Evanston, Ill., LB **$513,700** 3 story NURSES HOME addn., EVANSTON, ILL. Cradle Society, 2049 Ridge Ave., Evanston, Ill. Bids Sept. 4. CD 8/24.

▲ **Foster Wheeler Corp.**, 165 Broadway, New York, N. Y., CA **$10,000,000** synthetic ammonia PLANT, LOCKPORT, ILL. Texas Co., 332 S. Michigan Ave., Chicago, Ill.

Kelso Constr. Co., 1710 W. Lawrence Ave., Chicago, Ill., LB **$462,317**, 1 story, brick, VILLAGE HALL and LIBRARY, 10240 Roosevelt Rd., WESTCHESTER, ILL. Village, Village Hall, Westchester, Ill. Bids Aug. 27. CD 8/17.

Woerfel Corp., 5345 N. Hopkins St., Milwaukee, Wis., CA, Est. **$563,000**. 1 story, 125x358 ft. concrete, steel, concrete block welding and fabricating PLANT, WEST MILWAUKEE, WIS. Harnischfeger Corp, 4400 N. National Ave., Milwaukee, Wis.

▲ **Bert L. Smokler & Co.**, 1200 Penobscot Bldg., Detroit, Mich. Owner Builds. **$1,200,000** 70 brick ranch HOUSES, Mount Royal, Commerce Lake, BLOOMFIELD, MICH.

H. C. Merriman & Son, Orland, Ind., CA **$344,750** general constr. ELEMENTARY SCHOOL addn., GYMNASIUM, CONSTANTINE, MICH. Bd. Educ., Constantine, Mich. Guida A. Binda & Assoc., 231 Capitol Ave., Battle Creek, Mich., archts.

▲ **Sullivan-Smith, Inc.**, 22963 Outer Dr., Dearborn, Mich. Owner Builds. **$3,200,000** Warren Valley Subdivision 190 brick ranch HOMES, Warren Ave. sect., DEARBORN, MICH.

Uniland Co., 2560 Second St., Detroit, Mich. Owner Builds. **$490,000.** APARTMENT, 10 units, 58 rooms, DETROIT, MICH.

▲ **Thompson-Brown Co.**, 19426 Grand River, Detroit 23, Mich. Owner Builds. **$3,900,000** Kendallwood Subdivision, 220 brick HOMES, FARMINGTON, MICH.

Sorensen-Gross Constr. Co., Flint 1, Mich., CA **$627,337** Genesee County JUVENILE FACILITY, detention unit, FLINT, MICH. Bd. Supervs. Genesee Co., Joseph Galliver, aud., County Court House, Flint, Mich. Bids Aug. 20. CD 8/6.

▲ **Hallmark Builders**, 18109 James Couzens Hy., Detroit Mich. CA Est. **$1,125,000**. Lotus Lake Subdivision, 80 brick HOMES, WATERFORD, MICH. Rose-Hills Realty Co., 14601 Seven Mile Rd., Detroit, Mich.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲ **Colo., Boulder**—BA 10/1—City, City Hall, sewage treatment plant and outfall sewer. $1,000,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 11/15/55.

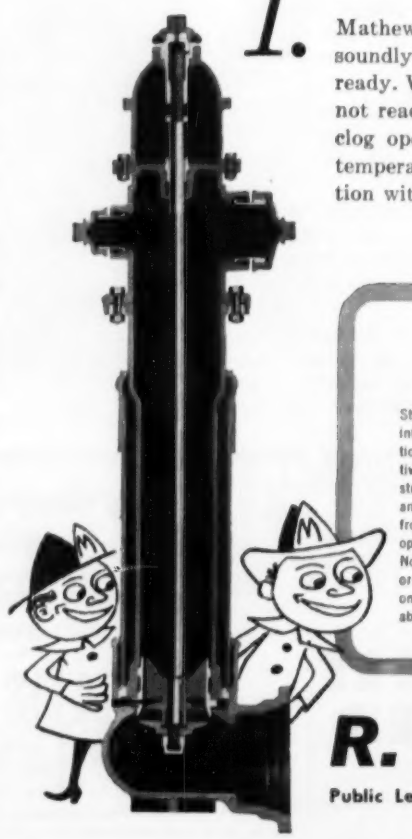
† **South Dakota**—BA On Or About 11/14—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., furnish seven 128,500 hp. Francis type hydraulic turbines complete with spiral case, spiral case exten., draft tube liner, pit liner and appurtenant parts, for Oahe Reservoir Proj., near Pierre, CIVENG-25-066-57-29. CD 5/25/44

BUILDINGS—BA

Tex., Fort Worth—HEALTH CENTER—BA 10/4—City, c/o Dr. Jack Garrison, mayor, and Gus Brown, county judge, City Hall, masonry, concrete, steel health center, Camp Bowie at Arch Adams St. $720,000. Plans deposit $25. Extended date. Herman G. Cox, 415 N. P Anderson Bldg., archt. CD 9/12.

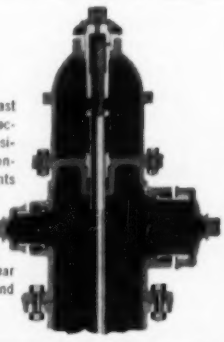
SPECIFY MATHEWS FOR

You need ask two questions



1. **Will they be ready for instant use in an emergency?**

Mathews Hydrants are so simply and soundly constructed that they are always ready. Water, ice and sandy deposits cannot reach key parts to rust or freeze, or clog operation. In any weather and all temperatures, Mathews Hydrants function with a minimum of maintenance.



Stuffing box plate, cast integral with nozzle section, provides a positively leakproof construction. It prevents any water or sand from reaching the operating thread. No rusting, freezing or clogging. No wear on thread through sand abrasion.

R. D. WOOD

Public Ledger Building, Independence Square
Philadelphia 5, Pa.

Tex., Denison—SCHOOL IMPRVS.—BA 10/9—Denison Independent School Dist., Denison, school imprvs., incl. Lamar, Sam Houston and Terrell Schools addns.; new elementary school and fieldhouse, $500,000. Plans deposit $25. Wilson, Patterson & Assocs., 601 Bailey St., Fort Worth, archts. CD 9/18, under LB.

▲ Colo., Colorado Springs—HOSPITAL—BA 10/31—Glockner-Penrose Hospital, 2200 N. Tejon St., 12 story, 300-bed Glockner-Penrose Hospital. $5,500,000. Fisher & Fisher, Denver National Bldg., Denver, engrs. CD 7/5/55.

BUILDINGS—SLC

▲ Colo., Denver—BANK—Federal Reserve Bank of Kansas City, 1111 17 St., soon lets contract, 3 story, bsmnt., 68x125 ft. bank addn. $1,500,000. T. H. Buell & Co., 730 14 St., engrs. CD 8/7.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

W. Hodgman & Sons, Fairmont, Minn. LB $278,862. (6 bidders) b. conc. 3.8 mi. between Newton Ave. in Albert Lea and 3 mi. east, Freeborn and Steele Counties. Bids Aug. 17. CD 8/7.

Phelps-Drake Co., Inc., 1415 S.E. Eighth St., Minneapolis, Minn. CA $91,800 (1 bidder) sanitary sewer, appurtenances, EDINA (P.O. MINNEAPOLIS) MINN. Village, Gretchen S. Alden, clk., Edina, Minn. Bids Sept. 10. CD 8/23.

IOWA—State Hy. Comn., Ames,

Iowa—Booth & Olson, Inc., 529 Insurance Exchange Bldg., Sioux City, Iowa. LB $232,871. c. conc. 1.225 mi. FN-38, Plymouth Co.;

Iowa—Gus Ostermann & Sons, Ocheyedan, Iowa. LB $176,148. grading 9.716 mi. Special F-984 (2) Chickasaw Co.;

Iowa—Scothorn Constr. Co., Cherokee, and Linnon-Gibson Constr. Co., Pocahontas, Iowa, LB $95,508. grading 9.484 mi. Special FN-1062, Humboldt-Pocahontas Counties. Bids Sept. 11. CD 8/30.

Wilton Telephone Co., Herschel Fiater, pres. and mgr. Wilton Junction, Iowa, Force Account. $254,000. imprvs. exten. rural telephone system, incl. new lines, Cedar and Muscatine Counties, IOWA. Phillip L. Burns, 630 Davenport Bank Bldg., Davenport, Iowa, engrs. CD 9/10.

Dobson & Robinson Constr. Co., 823 1st Natl. Bank Bldg., Lincoln, Neb., CA $509,750, pipe lines in Ashland Well Field, LINCOLN, NEB. City, City Hall, Lincoln, Neb. Bids Aug. 22, awarded Aug. 27. CD 8/28, under LB.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Okla.—W. E. Hodges, 1633 N. Eastern St., Oklahoma City, Okla. CA $99,802, est. $106,331. concrete, steel bridge, US 77, north edge of Guthrie, Logan Co.;

Okla.—Cosmo Constr. Co., 1710 N. Broadway, Oklahoma City, Okla. CA $292,645, est. $313,511. five concrete, steel bridges, US 66 bypass in Tulsa, Tulsa Co.;

Okla.—Henryetta constr. Co., Henryetta, Okla. CA $574,548, est. $525,103. six grade separations, on US 66 bypass in Tulsa, Tulsa Co. Grand total $966,995. Bids Sept. 11, awarded Sept. 12. CD 9/4, 8/30.

▲ OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Okla.—Austin Contr. Co., Box 1590, Dallas, Tex. LB $595,250, est. $555,799. soil cement base with P.C. conc. 7.635 mi. US 66, west of Erick, Beckham Co.;

Okla.—Brooks & McConnell, 5020 N.W. 16 St., Oklahoma City 7, Okla. CA $437,311, est. $420,209. stabil. aggregate base with P.C. conc. 2.153 mi. US 81 at Ninnekah, Grady Co.;

Okla.—Cohenour Constr. Co., Ardmore, Okla. CA $107,653, est. $127,236. stabil. aggregate base with double bit. surf. 3.972 mi. US 270 at Hodgens, Leflore Co.;

Okla.—Curry Materials Co., Antlers, Okla. CA $264,668, est. $270,241. stabil. aggregate base with double bit. surf. 7.854 mi. Hy. 87 through Harris, McCurtain Co.;

Okla.—S. E. Evans, Inc., Box 903, Fort Smith, Ark. CA $103,790, est. $139,798. grade, drain 5.004 mi. US 266, McIntosh Co.; CA $113,415, est. $135,859, grade, drain 2.24 mi. US 271, northeast of Talihina, Leflore Co.; CA $123,058, est. $145,633, grade, drain 2.17 mi. US 271, at Talihina, Leflore Co.;

Okla.—Horn & Smith, Lawton, Okla. CA $231,613, est. $241,049. conc. 1.132 mi. US 283, in Mangum, Greer Co.;

Okla.—Hunter Constr. Co., Ada, Okla. CA $212,849, est. $218,145. stabil. aggregate base with rock asph. surf. 5.259 mi. Hy. 48 south of Tupelo, Coal Co.;

Okla.—Imperial Paving Co., 700 E. Grand St., Oklahoma City 4, Okla. CA $344,972, est. $316,541. stabil. aggregate base, b. conc. surf. 0.93 mi. May Ave., south of 13 St., Oklahoma City, Oklahoma Co.;

Okla.—Clarence Keck, Fairview, Okla. CA $99,932, est. $142,662. grade, drain 5.931 mi. Hy. 47, west of Thomas, Custer Co.;

Okla.—Haskell Lemon, 3014 N.W. 49 St., Oklahoma City, Okla. CA $151,798, est. $178,056. stabil. aggregate base with double bit. surf. 5.229 mi. Hy. 99-B, south of Wewoka, Seminole Co.; CA $148,548, est. $172,481. stabil. aggregate base with double bit. surf. 4.56 mi. Hy. 99-B, east of Bowlegs, Seminole Co.;

Okla.—McConnell Constr. Co., 5020 N.W. 16 St., Oklahoma City, Okla. CA $138,248, est. $143,693. stabil. aggregate base, double bit. surf. 5.414 mi. Hy. 10, Welch, Craig Co.;

Okla.—Mosher & Kiker, El Reno, Okla. CA $191,527, est. $226,499. grade, drain 2.883 mi. US 77, south Canadian River Bridge, Gooldsby, McClain Co.;

Okla.—Standard Industries, 2119 E. 11 St., Tulsa, Okla., CA, $99,359, est. $100,598. stabil. aggregate base with double bit. surf. 2.421 mi. county road at Drumright, Creek Co.; CA, $116,342, est. $138,587, c. conc. 0.903 mi. Hy. 97 in Sapulpa, Creek Co.;

Okla.—H. D. Youngman, Baxter Springs, Kan., CA, $488,454, est. $578,668, stabil. aggregate base with b. conc. surf. 6.553 mi. US 69 at Kiowa, Pittsburg Co. Grand total $3,968,787. Bids Sept. 11, awarded Sept. 12. CD 8/30, 9/4.

TEXAS—State Hy. Comn., Austin,

Tex.—Austin Bridge Co., P. O. Box 1590, Dallas, Tex., LB $387,571. 2.669 mi. Guadalupe River and 12 mi. Coleto Bridge and approaches, Hy. FM 766 and 237, Proj. R 1113-1-4 and R 941-4-2, DeWitt and Victoria Counties;

Tex.—Callan Constr. Co., P. O. Box 3146, Waco, Tex., LB $147,857, 0.642 mi. Paluxy River Bridge and approaches, Hy. US 67, Proj. F 1048 (4), Somervell Co.;

Tex.—J. C. McLaughlin, P. O. Box 1149, Bryan, Tex., LB $76,517, bridge and approaches, 0.333 mi. Hy. FM 356, Proj. C 475-9-6, Trinity Co. Bids Sept. 11. CD 8/22.

TEXAS—State Hy. Comn., Austin,

Tex.—M. E. Worrell, Junction, Tex., LB $125,443, San Felipe Creek bridges and approaches, 0.756 mi. Hy. US 90, Proj. F 213 (6), Val Verde Co.;

Tex.—Kidwell & Rogers Constr. Co., 4515 Prentice St., Dallas, Tex., LB $182,799, widening bridges, 0.289 mi. Hy. US 190, Proj. C 231-3&4-17&12, Bell Co.;

Tex.—Heidenfels Bros., P. O. Box 1917, Corpus Christi, Tex., LB $187,328, bridges and approaches 1.229 mi. Hy. FM 530 and 1157, Proj. R 1090-1-4, R 1307-1-6, Jackson Co. Bids Sept. 12. CD 8/22, 8/30.

▲ TEXAS—State Hy. Comn., Austin,

Tex.—John F. Buckner & Sons, P. O. Box 76, Glenburne, Tex., LB $270,240, flexible base, hot mix b. conc. pavement 1.13 mi. Hy. SH 174 and 171, Proj. F 1093 (3), Johnson Co.;

Tex.—Callan Constr. Co., P. O. Box 3146, Waco, Tex., LB $92,744, grading, structures, base, surf. 4.839 mi. Hy. FM 2307, Proj. R 2171-1-1, Falls Co.;

Tex.—Harry Campbell, Rte. 5, Box 68-A, Abilene, Tex., LB $164,183, flexible base, hot mix b. conc. pavement 13.074 mi. Hy. US 67 and 377, Proj. F 83 (3), Brown Co.;

Tex.—H. V. Caver, Inc., P. O. Box 184, Atlanta, Tex., LB $116,418, grading, structures, base, surf. 6.065 mi. Hy. FM 2327, Proj. R 2241-1-1, Cass Co.;

Tex.—Cooper & Woodruff, Inc., 204 Mays Bldg., Amarillo, Tex., LB $434,979, grading, structures, base, surf. 15.785 mi. Hy. RM 1061, Proj. R 1245-2-4, Potter Co.;

Tex.—Joe Davidson, P. O. Box 439, Terrell, Tex., LB $127,306, grading, structures, base, surf. 7.225 mi. Hy. FM 2329, Proj. R 2196-1-1, Henderson Co.;

Tex.—F. C. Herrling, Kurten, Tex., LB $424,892, extend structures, widen, leveling 9.557 mi. Hy. US 84, F 450 (5), Freestone Co.;

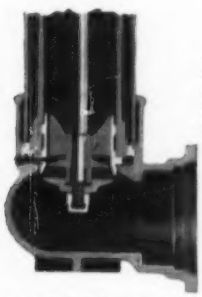
Tex.—Kehe Constr. Co., P. O. Box 671, Sherman, Tex., LB $191,947, c. conc., and T & P overpass, 0.64 mi. Hy. US 69, Proj. F 707 (1) and FG 707 (2) Grayson Co.;

Tex.—R. W. McKinney, P. O. Box 190, Nacogdoches, Tex., LB $335,517, grading, structures, base, surf.

DEPENDABLE PROTECTION
only
about fire hydrants:

2. Can the hydrant be quickly replaced if broken in a traffic accident?

When you have Mathews Hydrants on the job, neighborhood fire protection can suffer only momentary interruption. A broken Mathews Hydrant can be replaced with a new barrel in less than half an hour, and *without excavating.*

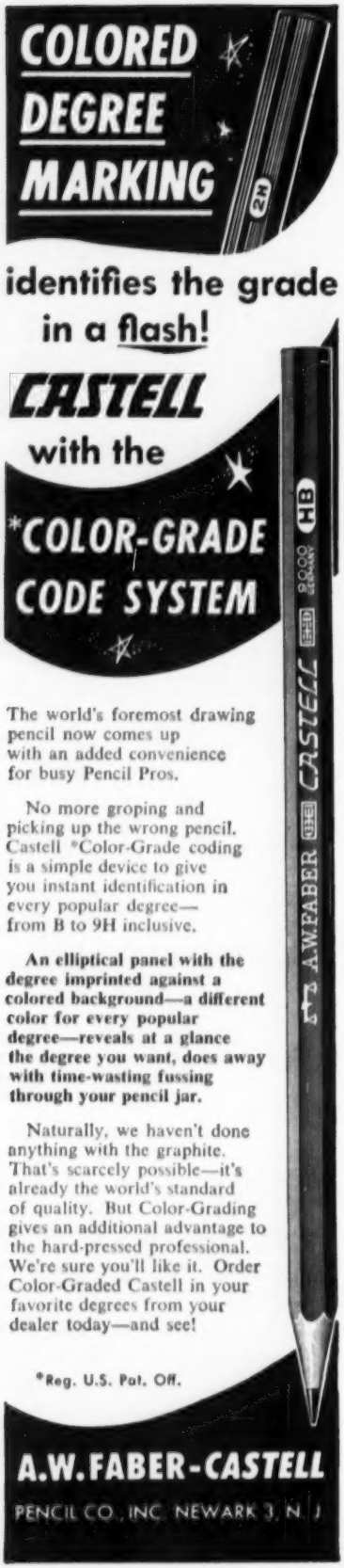


Main valve, true compression type, opens against and closes with water pressure. The higher the pressure, the tighter the valve. When hydrant is broken in traffic accident, there's no leakage with consequent dangerous loss of pressure.

Available for mechanical joint connections

COMPANY

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves


COLORED
DEGREE
MARKING
identifies the grade
in a flash!
CASTELL
with the
*COLOR-GRADE
CODE SYSTEM
The world's foremost drawing pencil now comes up with an added convenience for busy Pencil Pros.
No more groping and picking up the wrong pencil. Castell *Color-Grade coding is a simple device to give you instant identification in every popular degree—from B to 9H inclusive.
An elliptical panel with the degree imprinted against a colored background—a different color for every popular degree—reveals at a glance the degree you want, does away with time-wasting fussing through your pencil jar.
Naturally, we haven't done anything with the graphite. That's scarcely possible—it's already the world's standard of quality. But Color-Grading gives an additional advantage to the hard-pressed professional. We're sure you'll like it. Order Color-Graded Castell in your favorite degrees from your dealer today—and see!
*Reg. U.S. Pat. Off.
A.W.FABER-CASTELL
PENCIL CO., INC. NEWARK 3, N. J.

7.962 mi. Hy. FM 1281, Proj. S 2101 (1), Gayson and Fannin Counties;

Tex.—**South Texas Constr. Co.**, P. O. Box 3536, Corpus Christi, Tex., LB **$142,312**, grading, structures, base, surf. 4.452 mi. Hy. FM 1302, Proj. S 2121 (1), Victoria Co.;

Tex.—**Dean Word Co.**; P. O. Box 330, New Braunfels, Tex., LB **$1,323,438**, flexible base, hot mix b. conc. 4.387 mi. Hy. US 81, Proj. I 8 (14), Travis Co. Bids Sept. 12. CD 8/22, 8/30.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**Austin Bridge & Austin Road Co.**, P. O. Box 1590, Dallas 1, Tex., LB **$1,261,652**, grading, storm sewers, c. conc. 0.681 mi. Hy. US 67 and 77, Proj. I 288 (7) Dallas Co.;

Tex.—**Aydock-Mitchell, Inc.**, 207½ W. Rusk St., Marshall, Tex., LB **$77,300**, grading structures, base, surf. 3.646 mi. Hy. FM 2348, Proj. R 2240-1-1, Titus Co.;

Tex.—**Baker, Bryson & Haner, Inc.**, P. O. 190, Borger, Tex., LB **$82,772**. grading structures base, surf. 7.037 mi. Hy. FM 2356, Proj. R 2219-1-1, Deaf Smith Co.;

Tex.—**R. C. Buckner**, P. O. Box 609, Jacksonville, Tex. LB **$97,503**, grading, structures, base surf. 0.995 mi. Hy. FM 839, Proj. R 545-5-4, Rusk Co.;

Tex.—**Centex Paving Co.**, P. O. Box 9062, San Antonio, Tex., LB **$205,781**, grading, structures base surf. 9.844 mi. Hy. FM 2288, Proj. S 2039 (1), Tom Green Co.;

Tex.—**Fred Hall & Son**, P. O. Box 488, Valley Mills, Tex. LB **$224,789**. grading, structures, base, surf. 8.849 mi. Hy. FM 1671 and 2269. Proj. S 2110 (1) and (2) and R 1656-1-4, Bell and Milan Counties;

Tex.—**Heidenfels Bros.**, P. O. Box 917, Corpus Christi, Tex. LB **$787,142**, flexible base, b. conc. 2.912 mi. Hy. SH 9 and US 77, Proj. F 657 (14), San Patricio and Nueces Countries;

Tex.—**Holland Page**, P. O. Box 1181, Austin, Tex. LB **$121,464**, grading structures base surf. 6.146 mi. Hy. FM 1467, Proj. R 1038-2-3, Brown Co.;

Tex.—**O. W. Howard** and **J. C. McLaughlin**, Madisonville and Bryan, Tex., LB **$250,614**. grading, structures, base surf. and St. L.S.W. R.R. underpass 8.822 mi. Hy. FM 1803 and Spur 164. Proj. R 2075-2-1 and C 164-5-4, Deaf Smith Co.;

Tex.—**Killian-House Co.**, 4600 Broadway, San Antonio, Tex., LB **$1,096,094**. flexible base, hot mix b. conc. 3.249 mi. Loop 13, Proj. I 1075 (6), Bexar Co.;

Tex.—**L. H. Lacy Co.**, 5630 Yale Blvd., Dallas, Tex. LB **$927,984**, grading, structures, G. C. and S. F. Ry overpass 12.126 mi. Hy. US 82, Proj. F 595 (17), F 549 (7), F. FG 549 (8), Cooke Co.;

Tex.—**R. W. McKinney**, P. O. Box 190, Nacogdoches, Tex. LB **$198,142**, grading, structures, base, surf. 9.25 mi. Hy. FM 1396 Proj. R 1979-1-2, Fannin Co.;

Tex.—**McMillin-Burkett Constr. Co.**, P. O. Box 1161, Texarkana, Tex., LB **$212,201**, grading, structures, base and surf. 7.943 mi. Hy. FM 270, Proj. R 766-4-2, R 767-2-1, Hopkins Co.;

Tex.—**Menefee Bros.**, P. O. Box 431, Center, Tex. LB **$95,573**, grading, structures, base surf. 5 mi. Hy. FM 363. Proj. S 38 (7 Newton Co. LB **$133,890**, grading, structures, base, surf. 5.294 mi. Hy. FM 1401, Proj. R 394-3-3, Panola Co.;

Tex.—**Henry L. Stafford**, P. O. Box 1047, Lubbock, Tex. LB **$101,119**, grading, structures, base surf. 10.148 mi. Hy. FM 2032, Proj. R 1872-2-3, Howard Co.;

Tex.—**Texas Bitulithic Co.**, P. O. Box 10365, Dallas, Tex. LB **$1,092,126**, flexible base, c. conc. pavement, base hot mix b. conc. 0.714 mi. Hy. Loop 217. Proj. U 1101 (6) and U-UG 1101 (7), Tarrant Co.;

Tex.—**Williams Bros. Constr. Co.**, 3311 Montrose Blvd., Houston, Tex., LB **$339,296**, grading, structures 9.244 mi. Hy. FM 2246 Proj. S 2136 (1), Jasper Co. Bids Sept. 11. CD 8/22, 8/30.

Way Engineering Co., 3232 Louisiana St., Houston, Tex. LB **$930,222**. air-conditioning for state capitol bldg., AUSTIN, TEX. State, State Bd. Control, Capitol Bldg., Austin, Tex. C. H. Page & Son, 1st Federal Savings & Loan Bldg., Austin, Tex., archts. Bids Sept. 12. CD 12/1/55, under Public Buildings.

▲ **City P. Service Bd.**, Navarro and Villita Sts., San Antonio, Tex. Own Forces. **$275,000**, overhead electric power lines; **$750,000**, addnl. underground electric distr. cable lines; **$500,000**, addnl. electric distr. transformers, SAN ANTONIO, TEX. Grand total $1,525,000. CD 1/25/56.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Smith & Lucas, Colorado Springs, Colo., CA, **$575,556**, est. $544,000. grading, structures 13.074 mi. FI 002-2 (37), Denver, Arapahoe and Douglas Counties. Bids Sept. 12. CD 9/6.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Hoyle Lowdermilk, 1950 W. Dartmouth St., Denver, Colo., CA, **$464,718**, est. $428,000. road mix asph. processing 8.538 mi. Colo. Proj. A-AA 15 (3); road mix asph. processing S 7.851 mi. A-AA 1 (11), Montrose and San Miguel Counties. Bids Sept. 7, CD 8/29.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver,

L. J. Hesser, Greeley, Colo., CA, **$310,433**, est. $294,000. c. conc. wid'n. plant mix overlay and structures 5.795 mi. Longmont Colo. Proj. C 07-0001-09, Boulder and Larimer Counties. Bids Sept. 7.

† **J. S. Brown-E. F. Olds Plumbing & Heating Co.**, Box 1215, Colorado Springs, Colo., CA, **$804,718**. service and supply area (utilities) IFB 05-613-22 Air Force Academy, COLORADO SPRINGS, COLO. Dpt. Air Force, P. O. Box 1670, Colorado Springs, Colo. Bids Aug. 28, awarded Sept. 5. CD 9/11, under LB.

BUILDINGS—LB & CA

Olson Constr. Co., 410 S. 7 St., Lincoln, Neb., CA **$600,000**. OFFICE, LINCOLN, NEB. State Farm Mutual Automobile Insurance Co., 1014 "O" St., Lincoln, Neb. Ellerbe & Co., E-1st Natl. Bank Bldg., St. Paul, Minn., archts. CD 4/6.

Parsons Constr. Co., 2512 Deer Park Blvd., Omaha, Neb. LB **$952,450**, general constr. Creighton High School Prep SCHOOL, 72nd and Western Ave., OMAHA, NEB. Creighton University, 27 and Hamilton Sts., Omaha, Neb. Bids Sept. 11. CD 8/22.

▲† **Quaker Valley Constructors, Inc.**, P. O. Box B, Pittsburg, Kan., CA, **$1,006,600**. HELIUM PLANT addn., EXELL, TEX. Bureau Mines, Dpt. Interior, Helium Activity, Box 911, Amarillo, Tex. CD 8/1.

▲ **American Constr. Co.**, Box 13037, Houston, Tex., CA, **$2,192,700**, est. $2,000,000. 155,000 sq. ft. masonry Sunnyside-Grimes area JUNIOR HIGH SCHOOL, HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol St., Houston, Tex. Bids Sept. 5. CD 8/9.

▲ **J. J. Fritch, General Contractor, Inc.**, 6834 Harry Hines Blvd., Dallas, Tex., CA, **$1,533,000**, womens DORMITORY and DINING HALL, LUBBOCK, TEX. Texas Technological College, Lubbock, Tex. Bids Sept. 5. CD 9/11, under LB.

James Newton, Box 4108, Odessa, Tex., CA, **$615,400**, Elementary SCHOOLS Nos. 1 and 2, MONAHANS-WICKETT, TEX. Monahans-Wickett Independent School Dist., Wesley Martin, supt., Monahans, Tex. Bids Sept. 6. CD 3/28.

▲ **Foster Wheeler Corp.**, 165 Broadway, New York 6, N. Y. CA Total est. **$23,000,000**. design and constr. PLANT expansion incl. new steam generation, cooling water utilities, inter-plant facilities, PORT NECHES, TEX. Neches Butane Products Co. (Texas-U. S. Chemical Co. and Goodrich-Gulf Chemicals, Inc.), Port Neches, Tex. CD 7/3.

▲ **A. A. & E. B. Jones**, 1050 S. Jason St., Denver, Colo., LB **$1,048,791**, general contract 3 story, 144x 259 ft. HOSPITAL Addn., DENVER, COLO. Childrens Hospital, 1056 E. 19 Ave., Denver, Colo. Bids Sept. 6. CD 8/21.

▲ **McDonald Bros.**, 2639 S. Lacienga St., Los Angeles, Calif., LB **$1,777,425**. TEST STAND No. 1, and mech. specialties, Glenn L. Martin Plant, DENVER, COLO. Glenn L. Martin Co., 1845 Sherman St. Denver, Colo. Bids Sept. 4. Aero Jet General Corp., 410 N. Citrus Ave., Covina, Calif., engrs.

FAR WEST

BUILDINGS—BA

▲ **Calif., Los Angeles**—HEADQUARTERS—BA 9/17—Dpt. Water & Power, 311 S. Spring St., East Valley District Headquarters, 12730 Saticoy St. $1,000,000. Plans deposit $100. Extended date. CD 8/3.

BUILDINGS—SLC

Wash., Seattle—CLASSROOM—Seattle University, Broadway and E. Madison St., soon lets contract 5 story 60,000 sq. ft., rein.-con. classroom bldg. Over $600,000. J. W. Maloney, Central Bldg., Zone 4, archt. CD 9/4.

HEAVY CONSTRUCTION—LB & CA

† **IDAHO**—Bureau P. Rds., Dpt. Commerce, 408 N. 10 St., Boise,

W. L. McNutt, Eugene, Ore., LB **$475,809** (6 bidders) bit. paving 2.422 mi. North Fork Payette, Hy. Proj. 23-A13, Valley Co. Bids Sept. 11.

▲ **Utah Constr. Co.**, 142 East Third South, Salt Lake City, Utah, CA **$8,000,000** 18,000 ft. ore haulage tunnel, driving project at the big Bingham Open cut mine, Bingham Canyon, Salt Lake Co., UTAH. Kennecott Copper Corp., F. C. Green, asst. gen. mgr., Bingham Canyon, Utah.

▲† **Mountain States Constr. Co.**, 9200 W. West Colfax St., Denver, Colo., LB **$2,452,340**, est. $3,845,100 right diversion tunnel, Glen Canyon Dam, Middle River Div., Colorado River Storage Proj. Colorado River on Leess Ferry, Spec. DC 4747, ARIZONA and UTAH. Bureau Reclamation, Dpt. Interior, Kanab, Utah. Bids Sept. 11. CD 8/8.

† **Headquarters**, 365th Air Division, Office of Contracting Officer, Davis-Monthan Air Force Base, Tucson, Ariz., cancelled bids to have been opened Aug. 6, 5 Senior Officers QUARTERS, site grading, drainage work, parking areas, driveways and walks, outside utilities, incl. water distr. sanitary sewer distr., gas and electrical dist., finish grading, planting and seeding, Davis-Monthan Air Force Base, No. 02-601-57-2, TUCSON, ARIZ. CD 7/19.

† **Commercial Builders**, Moscow, Idaho, CA **$618,030**, est. $561,641, Frenchman Springs pumping plant discharge lines, approach lateral W53.1, Block 79, Columbia Basin Proj. Spec. DC 4698, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Aug. 14, awarded Sept. 10. CD 8/22, under LB.

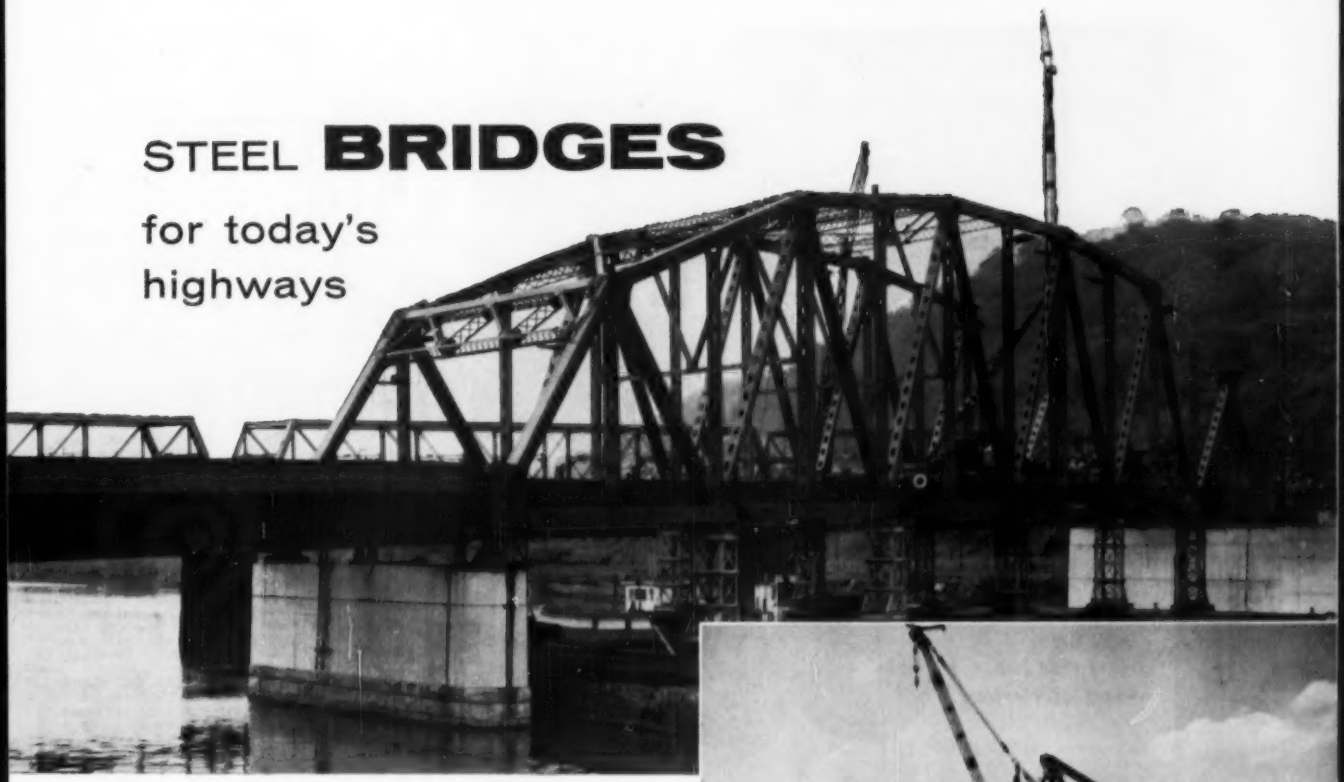
WASHINGTON—State Hy. Comn., Olympia,

Wash.—**R. Wamberg**, 77 West Shore St. S. W., Tacoma, Wash., LB **$153,525** (2 bidders) stockpiling crushed stone surf. ballast, sand & mineral aggreg. State Hy. 15-15C and 15-D, Peshastic Creek, Chelan Co.;

(Continued on page 88)

STEEL **BRIDGES**

for today's highways



PITTSBURGH •DES MOINES

Modern highways demand modern bridges wherever roads must "take to the air." For half-a-century, bridge fabrication and erection have been a vital part of our activities, with every advance in design and method reflected in the dependable structures we build. • The project pictured is the Fleming Park Bridge at Neville Island, Pittsburgh. With an overall length of 804 feet, the bridge has a through-truss channel span of 360 feet, and will accommodate four lanes of traffic, relieving a serious bottleneck in a heavily-travelled area. • Let us consult on your bridge requirements, and submit a quotation.

PITTSBURGH•DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES, SANTA CLARA, FRESNO, and CADIZ, SPAIN

Sales Offices at:

PITTSBURGH (25),.....3414 Neville Island	**DES MOINES (8),.....915 Tuttle Street**
NEWARK (2),.....216 Industrial Office Bldg.	**DALLAS (1),.....1219 Praetorian Building**
CHICAGO (3), 1218 First National Bank Bldg.	**SEATTLE,.....522 Lane Street**
LOS ANGELES (48),.....6399 Wilshire Blvd.	**SANTA CLARA, CAL.....621 Alviso Road**
MADRID, SPAIN.....Diego DeLeon, 60	

BUILT FOR FAR INTO THE FUTURE...
OHIO TURNPIKE
...with miles and miles of
C L O W
CAST IRON PIPE
built for more than 100 years of service
Eight "Service Plazas" along the 241 miles of the new Ohio Turnpike might be called "cities in miniature"—providing the many services that traveling America wants or needs for its cars, their drivers and passengers. Each has its own self-contained water system; drawing its water from adjacent wells or, in two instances, from nearby towns.
Clow Cast Iron Pipe was used in the water supply, treatment, distribution and sewage disposal systems—because today more than ever before, Clow's precise, modern production methods and advanced, exacting control of metallurgical quality give forward-looking engineers added assurance of permanence.
Invite a CLOW man in to talk with you as soon as pipe appears in your plans.
SINCE 1878
JAMES B. CLOW & SONS, Inc.
201-299 North Talman Avenue • Chicago 80, Illinois
Subsidiaries:
Eddy Valve Company, Waterford, New York
Iowa Valve Company, Oskaloosa, Iowa

(Continued from page 86)

Wash.—**D-H Paving Co.**, 6808 Highway 99, Vancouver, Wash., LB **$73,736** (4 bidders) grading, surf. emulsified asph. base tr. 2.819 mi. FAS S 0614 (1) Clark Co.;

Wash.—**Erland & Blickle**, 8265 N. Borthwick Ave., Portland, Ore., LB **$272,113** (2 bidders) grading, surf. cement-treated base b. conc. paving, installing illumination sys., 0.993 mi. Primary State Hy. 12, U-004-2 (10), Cowlitz Co.;

Wash.—**Carbon Brothers**, N. 3430 Cook St., Spokane, wash., LB **$81,362** (2 bidders) stockpiling crushed stone surf., maint. rock, mineral aggreg. and sand Primary State Hy. 3 and 22, Ferry and Stevens Counties;

Wash.—**Inland Asphalt Co.**, 10 and Havana St., Spokane, Wash., LB **$99,286** (3 bidders) bit. surf., b. conc. paving 1.13 mi. Sec. State Hy. 3-H, Spokane Co.;

Wash.—**F. G. Baulne**, Yardley, Wash., LB **$128,886** (3 bidders) crushed stone surf. 2.321 mi. S 0669 (1), Whitman Co. Bids Sept. 11. CD 8/27.

▲† **E-W Constr. Co.**, 3170 W. 11 St., Eugene, Ore., CA **$6,204,770** Wahluke Siphon Station 0 plus 00 to Station 159 plus 05.13 Wahluke Branch Canal and PE 16.4 wasteway, Station 577 plus 40 to Station 677 plus 26, Columbia Basin Proj., Spec. DC 4620, WASHINGTON, Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Aug. 21. CD 8/24, under LB.

▲ **S. Morgan Smith Co.**, York, Pa. CA Est. **$3,250,000.** five hydraulic turbine units for Swift Creek Power Plant No. 1 and No. 2, WASHINGTON. Pacifice Power & Light Co., and Cowlitz County Public Utility District, 920 S.W. 6 St., Portland, Ore. Bechtel Corp., 220 Bush St., San Francisco, Calif., engrs. CD 10/21/53.

BUILDINGS—LB & CA

Family Land Co., 2918 W. Compton Blvd., Gardena, Calif. CA, **$493,000.** 45 DWELLINGS, Rahn Ave., Barclay and Rameron Sts., DOMINQUEZ, CALIF. Sante Two Constr. Co. & Quarry Homes, Inc., 2918 West Compton Blvd., Gardena, Calif.

Stanton-Reed Co., 720 S. Palm Ave., Alhambra, Calif. LB **$796,661.** COUNTY BLDGS., 350 W. 5 Ave., POMONA, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Sept. 5. CD 8/16.

▲ **The Clarewood Co.**, Berkley, Calif. CA Est. **$2,000,000.** lift truck mfg. PLANT, SAN LEANDRO, CALIF. Yale & Towne Mfg. Co., 2438 West 3 St., Los Angeles 37, Calif. Wilsey & Ham, 111 Rollins Rd., Millbrae, engrs. CD 6/28.

Evert & Payton, 717 Main St., Santa Paula, Calif., CA **$719,985.** DINING COMMONS, Goleta Campus, SANTA BARBARA, CALIF. University of California, Santa Barbara College, Goleta, Calif. Bids Aug. 7. CD 8/16, under LB.

Berlin Constr. Co., 1213 N. Highland Ave., Hollywood 38, Calif. CA, **$846,000.** 94 DWELLINGS, Tract 2544, STANTON, CALIF. Clover Park, 1213 N. Highland Ave., Hollywood 38, Calif. William C. Jarret 1124 S. Beverly Bldg., Los Angels 35, Calif., archt.

CANADA

BUILDINGS—BA

Ont., Islington—MUNICIPAL BLDG.—BA 10/9—Township of Etobicoke, 4946 Dundas St. W., 3 story section 60x260 ft.; 2 story section 60x100 ft. rein.-conc. fdn. and frame, stone and brick walls, concrete roof deck L shaped municipal bldg., Highway 27 and Burnhanthorpe Rd. $750,000. Plans deposit $50. Shore & Moffat, 51 Wellington St. W., Toronto, archts. CD 11/11/53.

BUILDINGS—SLC

Alta., Edmonton—WAREHOUSE—Simpson-Sears Ltd., 108 Mutual St., Toronto, Ont., soon lets contract warehouse, 112 Ave. $450,000. Rule, Wynn & Rule, 11422 Jasper Ave., archts.

Que., Montreal—APARTMENTS—Degmey Investment Corp. c/o Thibodeau & Thibodeau, archts, 940 Cote de Liesse Rd., soon lets contract, 3 blocks of apartments, Plymouth Rd. $750,000. Deslauriers & Mercier, 1396 St. Catherine St. W., engrs.

HEAVY CONSTRUCTION—LB & CA

ALBERTA—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.

New West Constr. Co. Ltd., 10480 113 St., Edmonton, Alta., CA, **$852,622.** culverts, grading, base course and prime coat from Mile 22 to Mile 28, Banff-Jasper Highway, Banff. Awarded Sept. 4. CD 5/14, under LB.

ALBERTA—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.,

Mannix-Ludwig Ltd., 330-336 7 Ave. S.W., Calgary, Alta., CA, **$891,427** grading, culverts, base course and prime coat along 6 mi. Banff-Jasper Highway from Mile 28 to Mile 34, Banff. Awarded Sept. 4. CD 5/29.

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria.

General Constr. Co. Ltd., Granville Island, Vancouver, B. C., and **Pacific Bridge Co.**, 256 Montgomery St., San Francisco, Calif., U.S.A., CA, **$4,743,885.** floating structure, piers and abutments for toll bridge, across Okanagan Lake at Kelowna. Bids Aug. 16. CD 8/29, under LB.

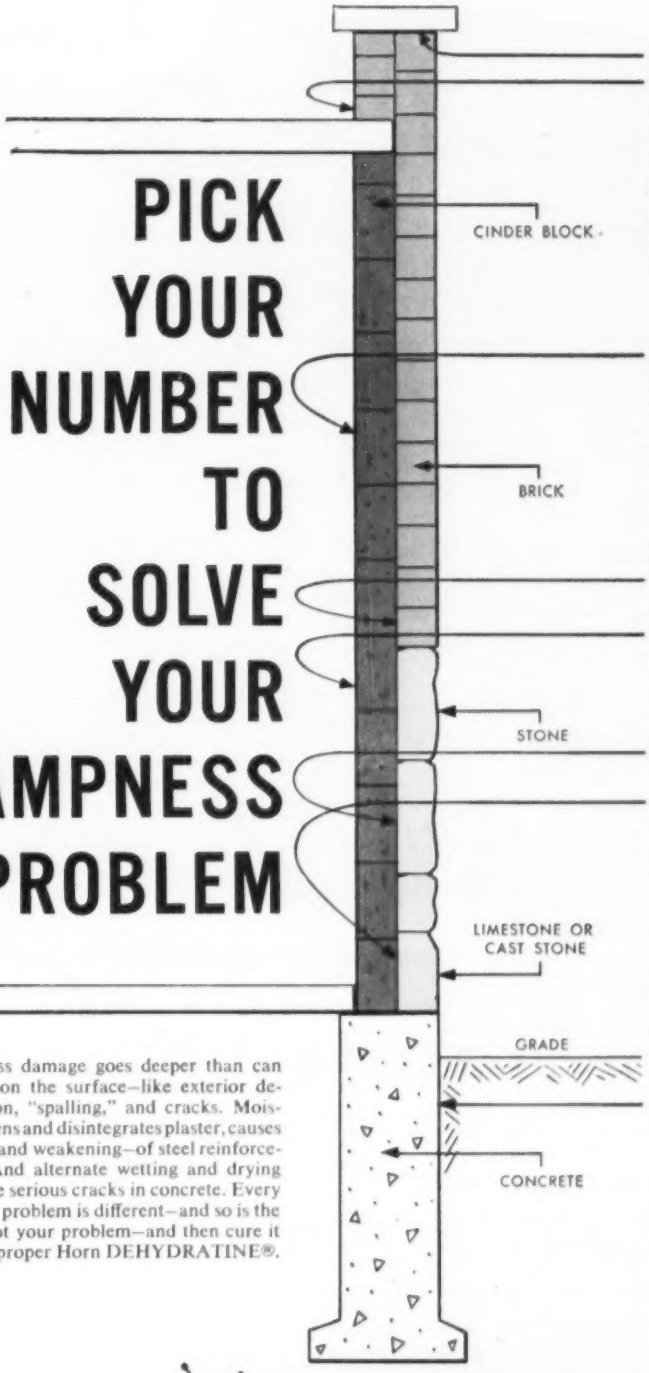
BUILDINGS—LB & CA

▲ **Brookfield Constr. Co. Ltd.**, 32 Inglis St., Halifax, N. S., CA, **$2,699,175.** 255 HOUSING UNITS with related services, Gagetown Army Camp, FREDERICTON, N. B. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Aug. 14, awarded Sept. 13. CD 7/27.

M. F. Schurman Co. Ltd., Eustane St., Summerside, P.E.I., CA, **$525,500.** Class I, 19-room standard SCHOOL with related services, Army Camp, Camp Gagetown, FREDERICTON, N. B. Defence Constr.

(Continued on page 90)

PICK YOUR NUMBER TO SOLVE YOUR DAMPNESS PROBLEM



Dampness damage goes deeper than can be seen on the surface—like exterior deterioration, "spalling," and cracks. Moisture softens and disintegrates plaster, causes rusting—and weakening—of steel reinforcements. And alternate wetting and drying can cause serious cracks in concrete. Every moisture problem is different—and so is the cure. Spot your problem—and then cure it with the proper Horn DEHYDRATINE®.

TO KEEP DAMPNESS FROM CONCRETE and MASONRY SECTION, select DEHYDRATINE #6. It is applied cold with a trowel to develop a continuous heavy film. It keeps dampness from concrete and masonry sections such as foundation walls, bridge abutments, retaining walls, culverts, footings, concrete floors, rear of parapet walls, etc.

TO SPAN HOLES AND CRACKS, use DEHYDRATINE #10. It's a heavy bituminous dampproof coating that spans holes and cracks. It bonds solidly to any masonry or metal . . . receives lime and gypsum plasters.

FOR SURFACES OF LOW POROSITY, use DEHYDRATINE #1. On surfaces of low porosity where bridging of surface pores is not required . . . receives gypsum and lime plasters.

FOR A STONE BACKING, use DEHYDRATINE #3. A special quick-drying bituminous brush coating which protects stone and masonry trim from staining caused by moisture. It also reduces warping and dry rot of wood trim.

TO DAMPPROOF DAMP MASONRY, use DEHYDRATINE #4. It contains a wetting agent to develop maximum bond with damp or "green" masonry . . . resists acid and alkali, provides a barrier against ground and water gases. DEHYDRATINE #6 can also be used here.

For more information about your dampproofing problem, write to Dept. H-31-99.

Plants:
Houston
Long Island City
Los Angeles
San Francisco
Toronto

A. C. Horn Companies
Subsidiaries & Divisions
Chemical Corporation
10th Street and 44th Avenue, Long Island City 1, N. Y.

Sales Offices and Warehouses throughout the United States and Canada

DIVISIONS OF SUN CHEMICAL CORPORATION
HORN (paints, maintenance and construction materials, industrial coatings) • **WARWICK** (textile and industrial chemicals) • **WARWICK WAX** (refiners of specialty waxes) • **RUTHERFORD** (lithographic equipment) • **SUN SUPPLY** (lithographic supplies) • **GENERAL PRINTING INK** (Sigmund Ullman • Fuchs & Lang • Eagle • American • Kelly • Chemical Color & Supply Inks) • **MORRILL** (news inks) • **ELECTRO-TECHNICAL PRODUCTS** (coatings and plastics) • **PIGMENTS DIVISION** (pigments for paints, plastics, printing inks of all kinds) • **OVERSEAS DIVISION** (export) • **A. C. HORN COMPANY, LIMITED** (Canada) • **GENERAL PRINTING INK CORPORATION OF CANADA, LIMITED** • **FUCHS & LANG de MEXICO, S. A. de C. V.**

NOW READY

Smoley's Tables

Enlarged — Revised
350 new pages

Time Savers for Engineers
Designers and Builders

— Since 1901 —

Slopes & Rises (192 additional pages) $6.00

Logs. & Squares (parallel tables increased from 100' to 300') $6.00

Log. Trig. Tables (areas and circum. extended from 100 to 205). $1.50

Segmental Functions $5.00

Three Combined Tables....$10.00

Four Combined Tables.....$12.00

Send Orders or inquiries to:

C. K. Smoley & Sons, Inc.
P.O. Box 14, Chautauqua, N.Y.

UNDERPINNING AND FOUNDATION CO

50 YEARS
AS GENERAL CONTRACTORS

PILING
SHORING
FOUNDATIONS
UNDERPINNING

CONSULTATION
AND
DESIGN

155 E. 44th Street
New York 17, N. Y.

(Continued from page 88)

(1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Aug. 7, awarded Sept. 13. CD 7/26.

▲ D. Robinson Constr. Ltd., Nanaimo, B. C., CA, $2,500,000. main section 7 story, 135-bed rein.-con. HOSPITAL with 2 story wing section, NEW WESTMINISTER, B. C. St. Mary's Hospital, Royal Ave., New Westminister, B. C. Awarded Sept. 7. CD 11/30.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲† Agroman, Madrid, Spain, LB $1,230,000. electrical transmission line, telephone ducts, water supply sys. ZAR-25, ZARAGOZA, SPAIN. Bureau Yards & Docks, Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash. 25, D. C., U. S. A. Bids Sept. 5 CD 8/22

PROPOSED PROJECTS

WATER SUPPLY

▲ Ala., Birmingham—City, City Hall, Warrior River pumping station, below Sipsey Fork. $14,300,000. J. W. Goodwin Eng. Co., 2111 7th Ave. S., consult. engr.

▲ Md., Baltimore—City, Bureau Water Supply, 503 Municipal Bldg., bond election Nov. 6, water supply, incl. pipe line to Susquehanna River and enlarging and improving distr. system. $45,000,000. CD 5/9/55.

▲ Md., Rockville—City, Court House, voted water bond issue Sept. 10, for constr. 8 mi. 24 in. line, intake station, filtration plant, revamping of water sys. within city. $2,600,000. CD 8/20.

▲ Tex., Longview—City, J. Clyde Tomlinson, mayor, City Hall, constr. dam and spillway, located above existing lake, which is city's principal water supply, on Cherokee Bayou at Silvey Bridge, $3,500,000; water main, running from dam and reservoir, on Cherokee Bayou, to city limits, $750,000; water pumping unit, $200,000; water storage, prob. elevated tanks, $150,000; some water distr. lines, $150,000.

▲ Wash., Bellingham—City, City Hall, addnl. supply lines, $3,439,900. J. W. Cunningham & Assoc., Portland Trust Bldg., Portland, Ore., consult. engrs.

SEWERS, WASTE DISPOSAL

▲ Conn., East Haven—Town, Town Hall, town-wide sewerage sys., treatment plant. $1,240,000. Bowe, Albertson Assocs., 75 West St., New York, N. Y., consult. engrs. CD 2/4/44.

▲ Md., Baltimore—City, Bureau Sewers, 312 Municipal Bldg., Zone 2, bond election Nov. 6, sewers. $5,000,000. CD 11/9/54

Wash., Seattle—Rainier Vista Sewer Dist., County-City Bldg., sewerage system. $900,000. Constr. may start next year.

BRIDGES

▲ NEBRASKA-IOWA—State Dpt. Roads & Irrigation, Lincoln, Neb. and State Hy. Comn., Ames, Iowa, bridge over Missouri River from Sioux City, Iowa to South Sioux City, Neb. $1,000,000. L. N. Ress, Lincoln, Neb., state engr.

▲ NEW JERSEY-PENNSYLVANIA—Delaware River Joint Toll Bridge Comn., Morrisville, Pa. bridge replacement, Point Pleasant and Sergeantsville, Bucks and Hunterdon Counties. $1,300,000. J. E. Greiner Co., 1106 N. Charles St., Baltimore, Md., consult. engr.

▲ Wash., Seattle—City, County-City Bldg., Zone 4, new approaches to Ballard Bridge and widening 15 Ave. W. $2,330,000. Bids next year. H. P. Powell, Smith Tower, Zone 4, consult. engr. CD 1/23/55.

STREETS AND ROADS

▲ Ill., Chicago—Cook Co., County Bldg., Stony Island Expressway from 79th to 107th, $30,000,000; paving and widening 87th St. between Cicero Ave. and Archer Rd., $4,500,000.

▲ NEW YORK—State Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, Erie Co.—Power Line Expressway (Grand Island Blvd. to Main St.), Buffalo. $1,500,000.

▲ OKLAHOMA—Oklahoma Turnpike Auth., 400 N. Walnut St., Oklahoma City, Southern Toll Road to Texas border. Alternate routes, 107 mi. from Oklahoma City to Red River, $58,339,168; 100 mi. from Oklahoma City to Randlett, $53,361,635; or Oklahoma City to Lawton, $35,845,000. DeLeuw, Cather & Co., 150 N. Wacker Dr., Chicago 6, Ill., consult. engrs.

▲ WASHINGTON—State Hy. Comn., Olympia, Yakima Co.—11 mi. limited access highway along Yakima River east of Yakima. $4,700,000. W. A. Bugge, dir. hys. Work next year.

Ont., Woodstock—Oxford County Council, County Bldgs., paving Governor's Road to new plant near Beachville. $860,000. J. A. Meathrall, County Bldgs., co. engr. CD 2/25/53.

▲ QUEBEC—Provincial Roads Dpt., Quebec City, Chicoutimi—new 32 ft. wide with 22 ft. asph. highway Quebec Province, Tadoussac to Chicoutimi. $5,000,000. CD 1/12/48.

EARTHWORK, WATERWAYS

▲† Alabama and Georgia—U. S. Eng., 2301 Grant St., Mobile 7, Ala., railroad relocations, Fort Gaines Reservoir, Patchen & Zimmerman Engineers, 1201½ Spring St. N. W., Atlanta, Ga., consult. engrs. CD 8/17/55.

▲† Alabama—U. S. Eng., 2301 Grant St., Mobile, Zone 7, Warrior Lock and Dam on Tombigbee River, Choctaw Co. $23,600,000 ($4,580,000 appropriated).

▲† Nebraska and Kansas—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Bostwick Division, Missouri River Basin Proj. for completion of Lovewell Dam, clearing reservoir area, relocating transmission lines and highway, Franklin and Superior Floodway Channels, and on Courtland and Miller Canals and laterals, $4,938,000 appropriated. CD 12/11/52.

▲† Nebraska—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Sargent Unit, Missouri River Basin Proj. to continue constr. of Woods Park pumping plant, Sargent Canal, laterals, detention dikes and channels, $1,214,000 appropriated. CD 5/25/44.

▲† Nebraska—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Frenchman-Cambridge Division, Missouri River Basin Proj., continuation of Meeker-Driftwood distribution system and Riverside Canal, $3,238,000 appropriated. CD 5/25/44.

† New Mexico-Colorado—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Navajo Dam unit start of constr. on Navajo Dam and reservoir and administration bldg. and warehouse, $800,000.

▲ Texas—Cummins Creek Water Control & Imprvt. Dist. No. 1, Columbus, building 31 dams on tributaries of Cummins Creek, Lee, Fayette and Colorado Counties. $1,000,000.

† Texas—U. S. Eng., Box 1600, Fort Worth, constr. West Levee, Part 2; extend storm sewers; emergency control structures for Dallas Floodway Exten. $500,000 appropriated. CD 8/13/53.

▲† Texas—U. S. Eng., 100 W. Vickery Blvd., Fort Worth, McGee Bend Dam in Angelina River. $4,000,000 appropriated. CD 10/27.

▲† Texas—U. S. Eng., Box 1229, Galveston, Buffalo Bayou Flood Control Proj. $6,900,000 appropriated. CD 9/30/54.

▲ Utah-Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Flaming Gorge Dam access road and temporary bridge, diversion tunnel, temporary housing units and administration bldgs. $1,300,000 appropriated. CD 9/7/44.

▲† Utah—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Deer Creek power plant and appurtenant facilities, Provo River Project, $985,000 appropriated. CD 9/7/44.

▲† Utah—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Wanship and Gateway power facilities, Weber Basin Project, $10,066,000 appropriated. CD 9/7/44.

▲† Washington—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. completion of laterals, addnl. distribution facilities, Columbia Basin Proj. $14,561,402 appropriated. CD 9/15/55.

▲† Washington—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. continuation of Roza Power Plant with capacity of 11,250 kilowatts, Yakima Proj., Roza Division, $1,726,154 appropriated.

▲† Washington—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., completion of pump discharge line for Amon Relift pumping plant and completion of distribution systems, Yakima Proj. $1,288,085 appropriated.

▲† Wyoming — Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., complete work on pumping plant, distribution system, main pipe line of Bridgeport Bar unit, Brewster Flats pumping plants, distribution and transmission facilities, Chief Joseph Dam Proj. $1,283,000 appropriated. CD 8/13/52.

▲† Wyoming—Bureau Reclamation, Dpt., Interior, Denver Federal Center, Denver, Colo., Anchor Dam and reservoir, complete Lucerne pumping plants, canals and conduits, Owl Creek Unit, Missouri River Basin Proj. $1,005,000 appropriated. CD 7/30/45.

▲† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., continuation of Glendo Dam, highway and railroad relocation and foundations for Glendo power plant, Glendo Unit, Missouri River Basin Proj. $11,012,000 appropriated. CD 7/30/45.

▲† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., continuation of work on distribution system and start of Little Sandy Diversion Dam and Little Sandy Canal Eden Proj. $1,079,000 appropriated.

† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., repairing, relocating river outlet works and power penstock trashrack modification of Buffalo Bill Dam, stabilization of canal banks and lateral lining, constr. drains, Shoshone Proj. $554,000 appropriated.

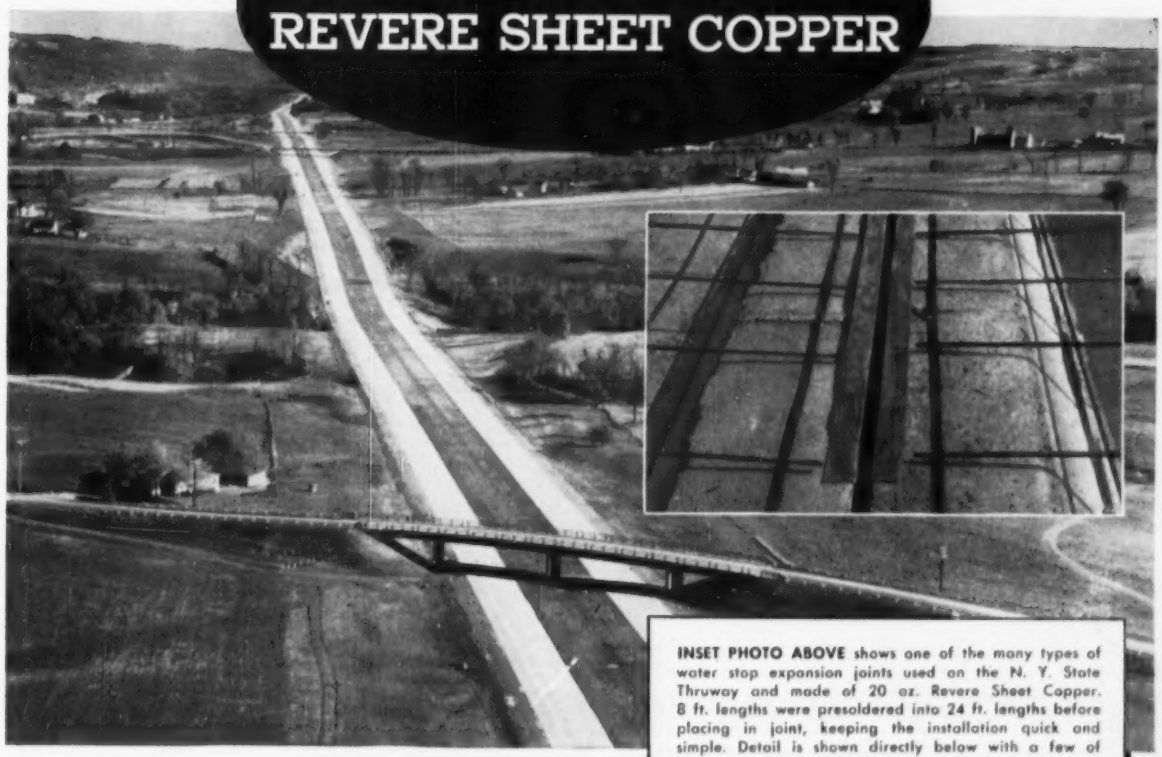
† Wyoming—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. completion of pumping plants, canals, conduits, laterals and other principal features of Highland Hanover and Bluff areas, Hanover-Bluff Unit, Missouri River Basin Proj. $640,000 appropriated.

AIRPORTS

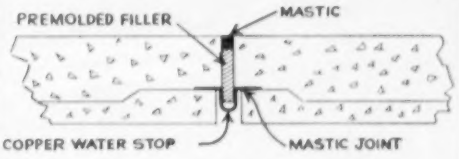
▲† Del., New Castle—RUNWAYS, etc.—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., plans by Edwards,

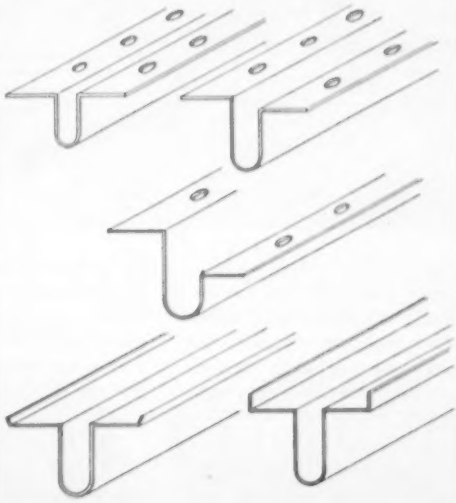
(Continued on page 92)

what they're doing with REVERE SHEET COPPER



INSET PHOTO ABOVE shows one of the many types of water stop expansion joints used on the N. Y. State Thruway and made of 20 oz. Revere Sheet Copper. 8 ft. lengths were presoldered into 24 ft. lengths before placing in joint, keeping the installation quick and simple. Detail is shown directly below with a few of the many types of joints used.





Water stop expansion joints on many bridges of

N. Y. STATE THRUWAY

are made of

20 OZ. REVERE SHEET COPPER

Ordinarily, when you drive over a bridge you don't think of expansion joints. But their function is as important as the concrete reinforcing rods or other members from which bridges are constructed. That's why copper was selected. It does not rust, rot or deteriorate, concrete does not bother it. Copper readily expands and contracts with temperature changes. It flexes to take every movement of the concrete slabs and the stress and strains year after year without breaking down, is readily worked into any desired shape and a cinch to join by soldering or brazing. Construction engineers and sheet metal men tell us, in a spec. there is no "or equal" for copper.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Brooklyn, N. Y.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Newport, Ark.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere.

COPPER • BRASS • 1801 • REVERE • ALUMINUM

(Continued from page 90)

Kelcy & Beck, consult. engrs.-archts., 1805 Walnut St., Phila., Pa., runways and facilities, New Castle Air Force Base. $5,000,000. CD 8/21.

PUERTO RICO

Puerto Rico—DORMITORIES, etc.—Polytechnic Institute of Puerto Rico, San German, plans two dormitories and altering 2 buildings. $622,000.

▲ Puerto Rico, Mayaquez—DORMITORIES, etc.—University of Puerto Rico, San Juan, plans two men's dormitories, services bldg. $2,000,000.

▲ Puerto Rico, Rio Piedras—DORMITORY, etc.—University of Puerto Rico, San Juan, plans women's dormitory and service bldg. $1,000,000.

LATIN AMERICA

▲ Guatemala, Guatemala City—Republic of Guatemala, Jorge Lizarralde, secy. Comn. & P. Wks., Guatemala City, plans 50,000 hp. hydro-electric plant, $8,000,000. Brown & Root, Inc., 4600 Clinton St., Houston, Tex., U. S. A., consult. engr. CD 2/13/53.

Venezuela—CRUDE LINE—Mene Grande Oil Co., Oveja, Venezuela, plans 111 mi. 6 in. crude line, Elias to Fria; 10 mi. 1 in. Limon to Leona-Daciona lateral; 24 mi. 12- to 16-in. Oficina tank farm to Oveja, $667,000.

PUBLIC BUILDINGS

▲† Ala., Birmingham—RESERVE CENTER—U. S. Eng., 2301 Grant St., Mobile, Zone 7, Army Reserve Center in northeastern section of here, and one in northwestern section, $1,000,000.

Ala., Cullman—HOUSING—Cullman Housing Auth., Cullman, plans by Turner & Northington, Medical Arts Bldg., Florence, 60 housing units. $700,688.

Ala., Opelika—HOUSING—Opelika Housing Auth., Opelika, plans by Charles S. Rush, Auburn, 60 housing units. $678,657.

Ariz., Flagstaff—DORMITORY—State of Arizona, Phoenix, plans by Lescher & Mahoney, Box 1828, Phoenix, men's dormitory, Arizona State College. $500,000. CD 8/24.

▲ Ariz., Tucson—DORMITORIES—University of Arizona, men's dormitory and women's dormitory. $2,200,000. CD 2/7/46.

Calif., Garden Grove—SCHOOL—Alamitor School Dist., 12012 S. Magnolia Ave., plans by Daniel, Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., Los Angeles, constr., north elementary school, near here. $550,000.

Calif., Los Angeles—COUNTY COURT—Bd. Supervs., Los Angeles Co., 501 Hall of Records, plans by Albert Criz & Assoc., 2523 W. 9th St., county courts bldg., West Los Angeles area. $579,016.

▲ Calif., Los Angeles—SCHOOLS—Bd. Educ., 1425 S. San Pedro St., plans by Victor Gruen, 135 S. Doheny Dr., Beverly Hills, Rossiter Ave. School, Rossiter Ave. and Emory St., Los Angeles, $950,000; plans by Pereira & Luckman, 9220 Sunset Blvd., Lena Ave. School, West Canega Park, $450,000; plans by James R. Friend, 708 Kress Bldg., Long Beach, South Shores School, 27 St., west of Western Ave., West San Pedro. $450,000. CD 4/8/55.

▲ Calif., Orange—PSYCHIATRIC BLDG.—Bd. Supervs. Orange Co., Court House, $1,750,000 bond election Nov. 6, psychiatric unit. CD 6/5.

Calif., Palm Springs—SCHOOL—Palm Springs Unified School Dist. plans by Williams, Clark, Trey & Chambers, 879 N. Palm Canyon Dr., masonry and granite Music and Auditorium Bldgs., steel roof constr. $600,000. CD 2/23/55.

▲ Calif., San Diego—CONVENTION HALL—City, Civic Center, San Diego, Calif. $8,500,000 bond election Nov. 6, convention hall.

▲ Calif., Santa Ana—COURT HOUSE—Bd. Supervs. Orange Co., Court House, $8,000,000 bond election Nov. 6, court house, county jail. CD 11/5/54.

▲ Calif., Santa Ana—HOSPITAL—Bd. Supervs. Orange Co., Court House, $5,500,000 bond election Nov. 6, 3 story, 100-bed main bldg., Orange County Hospital. CD 11/5/54.

▲ Calif., Santa Maria—SCHOOL—Santa Maria Union High School Dist., plans by Daniel, Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., Los Angeles, high school, Cuyama. $1,000,000. CD 5/1/53.

Calif., West Covina—HOSPITAL—West Covina Hospital, 741 S. Orange Ave., 1 story 26,762 sq. ft. masonry hospital addn. $569,000. Adrian Wilson & Assocs., 816 W. 5th St., Los Angeles, consult. engrs.

▲ Conn., Danbury—HIGH SCHOOL—Town, Town Hall, high school. $1,500,000.

▲ Conn., Hartford—AUDITORIUM—City, City Hall, municipal multi-purpose auditorium, North Meadows. $1,000,000. Dean Lund, Pub. Adm. Serv., 1313 E. 60 St., Chicago, Ill., consult. engr.

▲ Conn., Hartford—FIRE STATIONS—City, City Hall, plans by Danl. J. Tasillo, city archt., 4 fire stations, Park Terrace, Warrenton Ave., Brown St., Barbour St. $1,195,000. Winfred W. DeMay, city engr. CD 11/18/48.

Del., Wilmington—SCHOOL—Wilmington Bd. Educ., 511 W. 8th St., plans by Stanhope & Manning, 902 Orange St., elementary school, 17th and West Sts. $750,000. CD 3/11/46.

▲ Fla., Daytona Beach — HOUSING — Daytona Beach Housing Auth., Daytona Beach, plans by Griffin & Gomon, P.O. Box 1671, 130 housing units. $1,676,100.

▲ Fla., Pahokee—HOUSING—Pahokee Housing Auth., Inc., P.O. Box 918, plans by Pickett, Borowski & Stetson, West Palm Beach, housing units. $1,500,000. CD 6/25/51.

Ga., Washington—HOUSING—Washington Housing Auth. plans by W. S. McDonald, 41 Exchange Place S.E., Atlanta, 50 housing units. $500,000. CD 4/1/52.

Ill., DuQuoin—HOUSING—DuQuoin Housing Auth., plans by Glen B. Frazier, 102 S. Bennett Ave., Urbana, 50 housing units. $704,000. CD 8/22.

▲ Ill., Herrin—HOUSING—Herrin Housing Auth., plans by Lee Potter Smith & Assocs., 2221 Broadway, Paducah, Ky., 100 housing units. $1,172,000. CD 8/22.

▲ Ill., McHenry—SCHOOL—School Dist. 156, 500 S. Green St., plans by McCaughey, Erickson, Kristmann & Stillwaugh, 3 S. Prospect Ave., Park Ridge, high school addn., 500 S. Green St. $1,250,000.

▲† Iowa, Ames—LABORATORY—Dpt. Agriculture, 14 St. and Independence Ave. S.W., Wash. 25, D. C., Agricultural Departments' animal disease laboratory project adjacent to Iowa State College. $18,915,000. This is a federal project, all federal funds.

▲ La., New Orleans—HOUSING—Tulane University, 6823 St. Charles Ave., plans by Goldstein, Parham & Labouisse, American Bank Bldg., 3 story, brick, tile 168 family housing units, (LA-16CH-11). $1,680,000. CD 3/29.

▲ La., Opelousas—HOUSING—Opelousas Housing Auth., Opelousas, plans by Matkin & Fitch, 2307 Ryan St., Lake Charles, 140 housing units. $1,000,000. M. J. Goudeau, Opelousas, engr.

▲ Md., Baltimore—CIVIC CENTER, etc.—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, bond election Nov. 6, civic center-sports arena. $6,000,000.

▲ Md., Baltimore—SCHOOLS—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, bond election Nov. 6, schools. $29,500,000. CD 11/9/54.

Mass., Grafton—SCHOOL—Town, Supt. Schools, 3 Central Square, plans by Hugh A. Stubbins & Assoc., 78 Mt. Auburn St., Cambridge, elementary school, North End, Waterville St., $588,000 appropriated. CD 1/5.

▲ Mich., Inkster—HOUSING—Inkster Housing Auth., Inkster, plans by Otis Winn & Co., Michigan Bldg., Detroit, Zone 26, 200 housing units. $2,999,907. Bids in January, 1957. CD 8/8.

▲ Mich., Mount Clemens—HOUSING—Mount Clemens Housing Auth., Mount Clemens, plans by Otis Winn, 524 Michigan Bldg., Detroit, Zone 26, 100 housing units. $1,500,000.

Mo., St. Charles—HOUSING—St. Charles Housing Auth., St. Charles, plans by Maguolo & Quick, 4908 Demar

(Continued on page 95)

GLULAM GIRDERS + CONCRETE ROADWAY
= composite girder bridge for low cost and long life.
76-foot composite girder bridge over Spencer Creek near Reedsport, Oregon, carries 50-ton moving loads. Roadway is 12 feet wide between wheel guards. Design by U. S. Department of Interior, Bureau of Land Management.

Strength and rigidity of this composite girder bridge is a result of the well-engineered union of timber and concrete, with the best properties of each used to produce a permanent, economical structure.

To resist the shear between roadway and supporting girders, an 8-inch slab of concrete was poured over clip angles connected by shear plates and lag bolts to the creosoted glulam girders. In the composite beam action of the bridge, the concrete roadway acts as the compression member, and the glulam girders act as the tension members.

The bridge is of simple engineering, fast and easy to erect, low in cost, and practical in moderate length spans.

For information on this and other engineered timber bridge types, see your nearest Timber Structures office, or write us for the booklet, "Timber Bridges".

TIMBER STRUCTURES, INC.

P. O. BOX 3782-C, PORTLAND 8, OREGON

Offices in Ramsey, N. J.; Rochester, N. Y.; Boston; West Hartford; Cleveland; Charlotte; Chicago; Centerline, Mich.; Kansas City; Kirkwood, Mo.; Wichita; Minneapolis; Des Moines; Memphis; Dallas; Houston; Birmingham; Seattle; Spokane; Denver.

TIMBER STRUCTURES, INC. OF CALIFORNIA

Richmond • Beverly Hills • Sacramento

Local Representatives throughout the United States and Canada.

B.F.Goodrich

ON-THE-JOB TIRE SERVICE

Fully equipped Servicemobile
includes hydraulic crane, power wrench, 20-ton jack, tube repair vulcanizer, etc. Your BFG man handles all tire sizes and types on all kinds of jobs.

As close as your phone!

CALL your B. F. Goodrich tire service man when you need fast, expert on-the-job service. He's specially trained to cut costly down-time to a minimum and give you longer, trouble-free tire life. *Without cost or obligation*, your nearby B. F. Goodrich tire service man will:

- Inspect all your tires.
- Point out tires that should be repaired or replaced.
- Select tires for retreading by factory-tested and proved B. F. Goodrich methods.
- Start you on a program of regular tire rotation and inspection.

Any one of the following B. F. Goodrich district offices will arrange service • Phone the one nearest you

Albany, N. Y.	4-7181	Chicago, Ill.	ES 8-8900	Houston, Texas	CA 7-5228	Milwaukee, Wisc.	BR 1-8297	Phoenix, Ariz.	AL 6-6851
Atlanta, Ga.	EV 4561	Cincinnati, Ohio	BR 1-7800	Indianapolis, Ind.	ME 7-2508	Minneapolis, Minn.	FE 2-5474	Pittsburgh, Penna.	HI 1-5200
Birmingham, Ala.	4-0364	Columbus, Ohio	AM 8-8631	Jacksonville, Fla.	EL 6-4167	New Orleans, La.	CA 6341	St. Louis, Mo.	PR 3-2800
Boston, Mass.	LO 6-7080	Dallas, Texas	RI 5601	Kansas City, Kan.	MA 1-4400	New York, N. Y.	OR 9-0330	Salt Lake City, Utah	DA 2-2405
Buffalo, N. Y.	GR 4040	Denver, Colo.	TA 5-1267	Los Angeles, Calif.	RA 3-6111	Oklahoma City, Okla.	JA 5-1527	San Francisco, Calif.	AT 2-9620
Charlotte, N. C.	ED 4-3066	Detroit, Mich.	TY 4-4892	Memphis, Tenn.	WH 8-6761	Omaha, Neb.	PL 8133	Seattle, Wash.	MU 4300
						Philadelphia, Penna.	JE 3-9405	Washington, D. C.	RE 7-2966

Specify **B. F. GOODRICH TIRES WHEN ORDERING NEW EQUIPMENT**

UNIVERSAL | ROCK LOGGER | SUPER TRACTION | TRACTION EARTH MOVER | TRACTOR GRADER

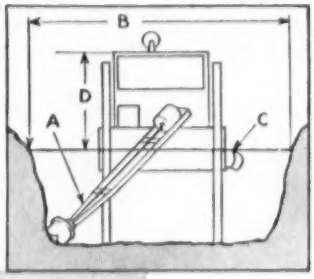
B.F.Goodrich

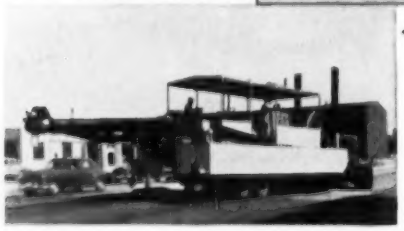
Your B. F. Goodrich retailer is listed under Tires in the Yellow Pages of your phone book

ANOTHER FIRST IN ELLICOTT DREDGES!

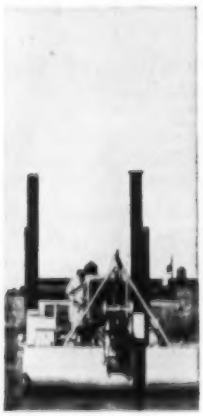
NEW ELLICOTT CANAL DREDGE

MANEUVERABILITY ➤ Moving ladder (A) eliminates need for swinging the entire dredge. As a result, these dredges require channel clearance (B) of only 13 feet for 6″ and 8″ models (16 feet for 10″ and 12″ models). Minimum draft (C) of 21 inches (for 6″ model) and low superstructure (D) permit passage under bridges, through shallows and in other places formerly inaccessible to hydraulic dredges.

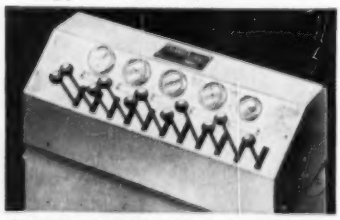




◀ PORTABILITY Complete Canal Dredge can be carried on low bed trailer or flatcar. At destination, a skid or single crane can place it where desired.



◀ WALKING ACTION New spud system on Canal Dredge includes both positioning spuds and walking spuds to move dredge forward, backward or sideways. No external moving power is necessary.



▲ ONE-MAN CONTROL Unique design permits one-man control — hydraulically powered—with every facet of dredging operation handled from one control panel.

permits maximum maneuverability in narrow, shallow waterways

Pioneers first practical application of portable swinging ladder dredge

Now Ellicott, leading designer and manufacturer of dredges, presents another *first* . . . the new Canal Dredge, designed so ladder and its cutter swing as a unit both vertically *and* horizontally! This and other pioneering developments have enabled Ellicott engineers to build a rugged dredge especially for narrow, shallow waterways—compact enough to handle work a big dredge cannot reach, yet powerful enough to do a variety of jobs. Even the smallest model—6″—has a rated output up to 80 cu. yds. per hr. and can deposit material up to 200 ft. away. Also available in 8″, 10″ and 12″ sizes. Canal Dredges offer fully self-sufficient, one-man operation and their performance is completely guaranteed by Ellicott! For information on Canal Dredge, or any specific dredging problem, write Ellicott Machine Corp., 1603 Bush St., Baltimore 30, Maryland.

ELLICOTT DREDGES

Branches and representatives throughout the world

(Continued from page 92)

Blvd., St. Louis, Zone 8, 48 housing units. $717,148. CD 7/31.

Miss., Corinth—HOUSING—Corinth Housing Auth., plans by B. A. England, Corinth, 80 housing units. $800,000.

▲ Neb., Omaha—PARKING—Omaha Parking Auth., City Hall, plans by L. A. Daly Co., archt.-engr., Insurance Bldg., underground parking under court house lawn. $1,000,000. CD 7/16.

▲ Neb., Omaha—NURSES' SCHOOL—University of Nebraska College of Medicine & Hospital, 42nd and Dewey Sts., plans by John Latenser & Sons, 1307 Farnam St., school for nurses. $1,111,855.

▲ N. H., Portsmouth—HOUSING—Portsmouth Housing Auth., plans by John D. Betley, 944 Elm St., Manchester, 124 housing units. $1,800,000. CD 7/14/52.

▲ N. J., Madison—HIGH SCHOOL—Bd. Educ., Madison, plans by Lawrence C. Licht, 19 Knickerbocker Rd., Englewood, high school, 42-acre tract. $2,500,000.

N. J., Upper Saddle River—SCHOOL—Bd. Educ. plans by Lee & Hewitt, 18 Church St., Paterson, 13 room addn. to Bogert School. $525,000.

† N. Y., Amherst—TRAINING CENTER—U. S. Army Engrs., Engineer Park, Buffalo, Zone 7, army reserve training center, N. Forest Rd. $600,000-$800,000.

N. Y., Fulton—SCHOOL—Fulton Bd. Educ., $830,000 bond referendum Dec. 1, James E. Lanihan Elementary School.

▲ N. Y., Ithaca—LABOR INDUSTRIAL RELATIONS—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, plans by Coffin & Coffin, 125 E. 46 St., New York, Zone 17, labor industrial relations bldg. at Cornell University. $2,000,000.

▲ N. Y., Olean—SCHOOL—Bd. Educ., Olean, high school. $1,000,000.

▲ N. C., Greensboro—HOUSING—Greensboro Housing Auth., plans by McMinn, Norfleet & Wicker, 2828 Lawndale Dr., 236 housing units. $3,250,000.

▲ N. C., Raleigh—HOUSING—Raleigh Housing Auth., Halifax Court, plans by Wm. Henley Deitrick & Assocs., 115 W. Morgan St., and F. Carter Williams, 133 Fayetteville St., 300 housing units. $3,000,000. CD 1/23.

N. C., Rocky Mount—HOUSING UNITS—Rocky Mount Housing Auth., plans by Thomas, Harles & Shields, Rocky Mount, 200 housing units. Rowland & Simpson, Kinston, consult. engrs. CD 3/5/52.

O., Benton—HIGH SCHOOL—East Holmes Local School Dist., Benton, $678,000 bond election Feb. 5, 1957, schools. $528,000. Bond election Nov. 6 cancelled. CD 8/1.

▲ O., Fremont—SCHOOL—Fremont Bd. Educ., Allen E. Rupp, supt., plans by McLaughlin & Keil, 500 Dominion Bldg., high school. $2,225,000. CD 11/11.

▲ O., Lorain—HOUSING—Lorain Metropolitan Housing Auth., 2153 Lorain Dr., plans by Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Cleveland, Proj. OH 12-2. 150 housing units. $1,500,000. CD 10/25/49.

Tenn., Cookeville—HOUSING—Cookeville Housing Auth. plans by Wallace & Clemmons, 1911 Division St., Nashville, 58 housing units. $500,000.

Tenn., Gallatin—HOUSING—Gallatin Housing Auth., Gallatin, plans by Thomas L. Clemmons, archt.-engr., 1911 Division St., Nashville, 60 housing units. $600,000. CD 5/9/52.

▲ Tenn., Johnson City—HOUSING—Johnson City Housing Auth. plans by A. H. Abernethy, 403 E. Market St., Johnson City, 100 housing units. $1,159,919. A. E. Bost, 408 Clinch Ave., Knoxville, consult. engrs.

Tenn., Lebanon — HOUSING — Lebanon Housing Auth., Lebanon, plans by Wallace & Clemmons, 1911 Division St., Nashville, Zone 4, 70 housing units. $829,362.

▲ Tenn., Memphis—HOUSING—Memphis Housing Auth., Admin. Bldg., 700 Adams Ave., or P.O. Box 68, Zone 1, plans by Charles S. Peete, 1596 Madison Ave., Tenn. 1-12, 319 housing units, $5,000,000; plans by Eason, Anthony, McKinnie & Cox, 1391 Madison Ave., Tenn. 1-7, 200 housing units, $3,000,000.

▲ Tenn., Springfield — HOUSING — Springfield Housing Auth., plans by Wallace & Clemmons, 1911 Division St., Nashville, 115 housing units. $1,000,000.

Tex., Brownwood—LIBRARY—City, City Hall, plans by Wyatt C. Hedrick, Box 765, Ft. Worth, library alterations, addns., $517,500.

▲ Tex., Hurst-Euless—SCHOOL, etc.—Hurst-Euless Independent School Dist., Hurst, plans by Stanley Brown, 4012 Cedar Springs, Dallas, group of school classrooms, $525,000; elementary school, $525,000. CD 7/10.

▲† Wyo., Cheyenne—HIGHWAY, etc.—Wyoming State Highway Comn., State Office Bldg., plans by Sam C. Hutchings, 1902 Thomes Ave., bldg. to provide patrol offices, highway offices, laboratory, highway shops and parking for 80 cars, located east of Warren Air Force Base. $2,000,000.

Ont., Toronto—SCHOOL—Toronto Bd. Educ., 155 College St., public school, Regent Park, north of Spruce St. between Sackville and Sumach Sts. $680,000.

COMMERCIAL BUILDINGS

Ark., Little Rock—DEPARTMENT STORE—J. C. Penney, Inc., 505 Main St., plans by Erhart, Eichenbaum & Rauch, archts. and consult. engrs, 201 Chester St., replace existing store with 3 story department store bldg., near 6th and Main Streets, $500,000. Work to start in January 1957.

Calif., Santa Cruz — CHURCH, etc. — Congregational Church of Santa Cruz, High St., plans by Leslie S. Nichols, 454 Forest Ave., Palo Alto, frame, masonry church, Sunday School and social hall. $600,000.

▲ Ga., Atlanta—DORMITORY, etc.—Emory University, City Office, Candler Bldg., plans by Robert & Co. Assocs., 96 Poplar St. N. W., woman's dormitory, apartment bldg. for married students and central food service bldg. all on the Emory Campus. $3,200,000. CD 9/12.

Ill., Chicago—RESEARCH—Illinois Institute of Technology, 3300 S. Federal, 4 story addn. to metals research bldg. at Armour Research Foundation of Ill. Institute of Technology, at 3350 Federal St. $575,000. Work to start in November. CD 12/1/47.

▲ Ill., Evanston—HOSPITAL, etc.—Lutheran Deaconess Hospital, 1138 N. Leavitt St., Chicago, plans by Burnham & Hammond, 53 W. Jackson Blvd., Chicago, hospital, nurses residence, parking area, Dempster and Western Sts. $4,500,000.

▲ Ind., Indianapolis—OFFICE—Allstate Insurance Co., Skokie, Ill., 1 story, 55,000 sq. ft. office bldg. and 100-car parking lot at Shadeland and E. Washington. $1,000,000. Work to start before end of 1956.

▲ Iowa, Dubuque—SCHOOL—Dubuque Catholic Parishes plans by Durrant & Berquest, 666 Loras Blvd., catholic high school, Kane and Carter Rd. $2,000,000. Bids in March. CD 12/30

Ky., Covington—SCHOOL, etc.—Catholic Diocese of Covington, Madison Ave., plans by Betz & Bankemper, Scott St., 1 story, bsmnt., brick, stone school, chapel, rectory and convent on Dudley Pike, $575,000. (rev) Bids November. CD, 3/29, under LB.

Ky., Lexington—DORMITORY—Transylvania University, 200 W. 3rd St., dormitory, $900,000.

▲ La., Hammond — DORMITORIES, etc. — Southeastern College, Dr. L. H. Dyson, pres., plans by Burk Le Brilate & Lamantern, 632 Pirates Alley, New Orleans, men's dormitory, $475,000; plans by Theo. Pierin & Assocs., 740 Poydras, New Orleans, women's dormitory, $550,000; plans by Riecietta Assocs., 521 Royal, New Orleans, family housing units, $600,000.

Mass., Jamaica Plain—APARTMENT —Cornelius P. Cronin, 241 Columbia Rd., Dorchester, plans by Edward F. Heenan, 73 Tremont St., Boston, 3 story, 72 unit apartment, 21 Pond St. Approx. $500,000.

Neb., Omaha—RECREATIONAL—Owner, c/o J. J. Vinardi, Farm Credit Bldg., recreational bldg., 42nd and B Sts. $760,000.

▲ N. H., Nashua—DORMITORY, etc.—Rivier College, Pres. Sister Adelard Marie, Sisters of Presentation of Mary, 429 Main St., plans by O. E. Nault & Sons, 48 Hamilton St., Worcester, Mass., dormitory bldg. and library Main St. $1,000,000. Constr. 1957.

▲ N. J., Clifton—OFFICE—Belmont Housing Development Co., 644 Broad St., Newark, multi-story office bldg., Allwood Rd. and Broad St., off Rte. 3. $1,000,000.

▲ N. J., East Brunswick Twp. (P. O. Old Bridge)—SHOPPING CENTER— Food Fair, Inc., 99 Park Ave., New York, N. Y., 100,000 sq. ft. shopping center to be known as Old Bridge Shopping Center, 1,000 car parking, on Rte. 18, $1,500,000.

▲ N. J., Morristown—APARTMENTS—Wilma Corp., Wm. Shapiro, 2600 Boulevard, Jersey City, plans by Erwin Gerber, 11 Commerce St., Newark, 5 story 75 unit air conditioned, elevator apartment, to be known as Franklin Hill Apartments, Hill and Franklin Sts. $1,500,000.

▲ N. J., Pequannock (P. O. Pompton Plains)—SHOPPING CENTER—Frank H. Taylor Co., Inc., 520 Main St., East Orange, shopping center, 50-acre tract. $10,000,000.

N. Y., Forest Hills—APARTMENTS—S.A.S. Bldgs. Corp., c/o H. H. Lillien, archt., 201 W. 72 St., New York, Zone 23, 6 story apartment, 71 Rd. and 110 St. $600,000.

▲ N. Y., New York—STUDENT FACULTY CENTER—Fordham University, Fordham Rd., student faculty center, on campus, $3,600,000. CD 11/11/54.

▲ N. Y., New York—GRADUATE SCHOOL—New York University, Washington Square, plans by Skidmore Owings & Merrill, 575 Madison Ave., Zone 22, 10 story, penthouse graduate school of business administration, 96 Trinity Place, $2,250,000, Seelye, Stevenson, Value & Knecht, 101 Park Ave., Zone 17, consult. engrs. CD 10/10/52.

▲ N. Y., New York—HOUSES—United Housing Foundation, Inc., 11 W. 42 St., New York, Zone 36, plans by Skidmore Owings & Merrill, 575 Madison Ave., Zone 22, Seward Park Houses, four 20 story bldgs. on 12½ acre site bounded by East Broadway, Grand St. and Willett St., Title 1 Proj. for 1,704 units, $21,000,000, Herman J. Jessor, 92 Liberty St., Zone 6, consult. engr.

N. Y., West Seneca—DEPARTMENT STORE—Southgate Plaza, Inc., Union and Seneca Sts., plans by Joseph J. Giegand, 234 Orange St., Buffalo, 1 story, bsmnt., 40,000 sq. ft. steel, concrete, brick block department store, Southgate Plaza for lease to Kobacker's Dpt. Stores. $750,000.

▲ N. Y., Yonkers—APARTMENTS—Syndicate, c/o Harry Silverman, archt., 342 Madison Ave., New York, Zone 17, 140 family apartments, 525 Riverdale Ave. $1,200,000.

▲ O., Beachwood—SHOPPING CENTER—D. A. Visconsi, 1010 Euclid Ave., Cleveland, Zone 15, will not construct 70-80 unit shopping center, Richmond and S. Woodland Rds. due to inability to reach agreement on contract for site. $15,000,000. Project abandoned. CD 11/29.

O., Cleveland—HEADQUARTERS—The Salvation Army, 2304 E. 9 St., Zone 15, 3-4 story headquarters bldg., 3443 Euclid Ave. $600,000. Work start in 2 to 3 years.

O., Elyria—STORE—Robert Hall Clothes, 333 W. 34 St., New York, N. Y., 50,000 sq. ft. store, Rte. 57 and Morgan Ave. $500,000.

▲ Okla., Tulsa—OFFICE, etc.—Well Surveys, Inc., Daniels Bldg., plans by Black & West, Tri State Bldg., office, shops and laboratory for Well Surveys at Independence and Garnett Rds. $1,275,000. CD 2/2.

Pa., Erie—DORMITORY—Gannon College plans by Nelson, Goldberg & Heidt, 1215 G. Daniel Baldwin Bldg., dormitory, $630,000. CD 9/6.

▲ Tenn., Donelson—SHOPPING CENTER—W. H. Criswell, Commerce Union Bank Bldg., Nashville, plans by Hart, Freeland & Roberts, 3rd National Bank Bldg., Nashville, shopping center on 17-acre plot in center of Donelson, Nashville suburb, $2,500,000.

Tex., Amarillo—SHOPPING CENTER—Henry Beverley, 800 W. 5th St., masonry shopping center, 34th and Georgia Sts., $500,000.

Tex., Amarillo—STORE—Sears Roebuck & Co., 917 Polk St., plans by Geo. Dahl, 2101 N. St. Paul St., Dallas, 104,000 sq. ft. masonry department store in Sunset Center. $750,000.

▲ Tex., Beaumont—HOTEL—LaSalle Hotel, c/o Dumas Milner, Beaumont, remodel, expand 250-room hotel. $1,500,000.

Tex., Corpus Christi—MOTEL, etc.—Padre Beach Development Co., c/o Ward McCreedy, c/o Chamber of Commerce, Corpus Christi, 100-unit motel, $400,000; shopping center, $500,000, at Padre Island.

▲ Tex., Houston—HOSPITAL—Methodist Hospital, 6516 Bertner St., plans by Milton McGinty, 2425 Ralph St., doubling existing 300-bed capacity hospital, in Texas Medical Center. $4,000,000.

▲ Tex., Houston—CHURCH—South Main Baptist Church, 200 Colquitt, church constr. program, Main and Colquitt Sts. $1,000,000.

▲ Tex., Houston—SHOPPING CENTERS—Lewis O. Tyra, c/o Irving R. Klein & Assocs., archts., 1317 Austin St., three 1 story 85,000 sq. ft. masonry bldgs., shopping center, $600,000; 2nd section containing 55,000 sq. ft. masonry shopping center, $400,000.

▲ Utah, Salt Lake City—BUSINESS DEVELOPMENT—Prudential Federal Savings & Loan Assn., Thomas T. Taylor, pres., 125 S. Main St., business development, incl. bank, offices, stores, shops, parking space, 33 South and State St. $1,000,000.

Vt., Montpelier—DORMITORIES—Vermont Junior College, College Ave., plans by Sturgis Assoc., Inc., 120 Boylston St., Boston, Mass., dormitory and central hall. Approx. $500,000. Bids in 1 month. A. Ehrenzella, Inc., 329 Washington St., Dorchester, Mass., mech. engr. CD 6/29.

▲ Wis., Superior—SHOPPING CENTER—H. Shanedling & Sons Corp., 2025 Nicolet Ave., Minneapolis, Minn., 12 unit shopping center, "Belknap Plaza," $1,500,000.

▲ Wis., West Allis—SHOPPING CENTER—Wildwood Center, Inc., 4308 W. Forest House Ave., Milwaukee, plans by Victor Gruen & Assoc., 135 S. Doheny Dr., Los Angeles, Calif., shopping center, $21,500,000.

▲ Ont., Toronto—OFFICE—Mutual Benefit Health & Accident Assn. and United Benefit Life Insurance Co., 33 and Farnam Sts., Omaha, Neb., office. $2,000,000.

INDUSTRIAL BUILDINGS

Conn., Milford—FACTORY—Burndy Engineering Co., Inc., Wampus Lane, plans by Leo F. Caproni, 1221 Chapel St., New Haven, 1 story factory addn. for mfg. purposes, $550,000.

▲ Fla., West Palm Beach—PLANT and TEST CENTER—Pratt & Whitney Aircraft Div., United Aircraft, 1 Charter Oak Blvd., West Haven 1, Conn., jet engine plant and test center, east of Lake Okeechobee, Palm Beach Co. $42,000,000.

▲ Ill., Chicago—FACTORY, etc.—Wendnagel & Co., 600 W. Cermak Rd., factory and fabrication yard near O'Hare Field, near here, $1,000,000.

▲ Ill., Peoria—FACTORY—LeTourneau-Westinghouse Co., 2105 W. Adams St., factory adjoining present one, $6,000,000.

▲ Ind., North Judson—FACTORY—Flintkote Co., 30 Rockefeller Plaza, New York, N. Y., factory to make insulrook, over $1,000,000.

Md., Baltimore—PLANT, etc.—Westinghouse Electric Corp., 2519 Wilkins Ave., 2 story plant and laboratory at Air Arm Div. $700,000.

Mass., Auburn—FACTORY—Lodding Engineering Corp., 43 Beacon St., Worcester, plans by Doak Martin, 8 Norwich St., Worcester, 55,000 sq. ft. factory and office bldg. Approx. $550,000.

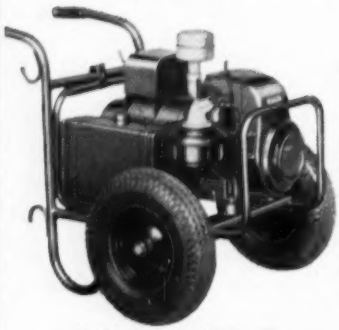
▲ Minn., St. Paul—INDUSTRIAL CENTER—M. Capp Mfg. Co., 1143 Dupont Ave. N., Minneapolis, industrial center "Midway Industrial Center" on Vandalia St., 3 blocks north of University Ave. to provide warehousing, distributing and light mfg. facilities, $3,000,000 Mayeron Eng. Co., St. Louis Park, consult. engr. CD 11/21.

Minn., St. Paul—CANNING—J. Schmidt Brewing Co., 827 West 7th St., constr. addnl. canning and bottling facilities at site, $500,000.

▲ Mo., Pleasant Hill—POWER PLANT—Missouri Public Service Co., Warrensburg, power plant, Ralph Green Generating Station, $3,750,000.

▲ N. J., Freehold—FACTORY, etc.—Irvington Varnish Co. (Minnesota Mining & Mfg. Co., St. Paul, Minn.), 6 Argyle Terrace, Irvington, 1 story, brick factory and offices, on 110 acre tract, Jones Siding Rd. and Asbury Ave. Approx. $1,500,000.

KOHLER
ELECTRIC PLANTS for independent power, anywhere, any time



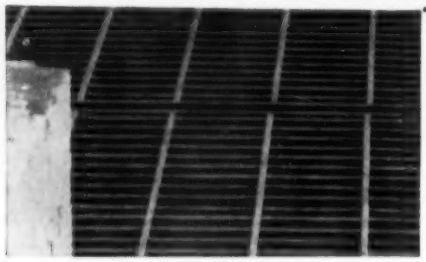
Save work hours with portable Kohler Electric Plants on the job. Light-weight, 2500 watt model provides low-cost power for floodlights, saws, drills, other electric tools. Has 4 receptacles, pilot light. Engineered by Kohler throughout. Two-wheel rubber-tired hand unit available. Other sizes, 500 watts to 35 KW. Write for folder N-1.

Model 2.5M25, *2500 watts, 115 volt AC. Manual starting.*

Kohler Co., Kohler, Wisconsin
Established 1873

KOHLER OF KOHLER
PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

IT'S THE GREATEST!
It's Hendrick Heavy-Duty Grating!



Hendrick Heavy-duty grating has a wide range of applications. It withstands the constant beatings of heavy industrial usage . . . takes the heavy shock loading of trucks right in its stride. And it's excellent for drainage installation. Bearing bars range in size from 2¼" x ⅜" to 4" x ⅜"; cross bars from 2" x 5/16" to 2¼" x 5/16". Standard grating is also available in sizes from ¾" x ⅛" to 2¼" x 3/16". Write for complete information.

HENDRICK
MANUFACTURING COMPANY

45 Dundaff St. Carbondale, Pa.

Sales Offices in Principal Cities

Perforated Metal • Perforated Metal Screens • Wedge-Slot and Hendrick Wedge-Wire Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids • Hendrick Hydro-Dehazer

▲ **N. Y., Grand Island**—RESEARCH LABORATORY—Hooker Electrochemical Co., Niagara Falls, N. Y., central research laboratory, $1,500,000.

▲ **N. Y., Massena**—PLANT—Reynolds Metals Co., 3d. and Grace Sts., Richmond, Va., aluminum reduction plant, near here, $100,000,000.

▲ **O., Elmore**—FACTORY—Brush Beryllium Co., 4301 Perkins Ave., Cleveland, Zone 3, factory for production of beryllium and beryllium copper alloy, $4,500,000.

▲ **Okla., Muskogee**—PLANT—Fansteel Metallurgical Corp., 3304 N. Harlem Ave., Chicago, Ill., tantalum plant, near here, $6,500,000.

▲ **Pa., Fallsington**—PLANT—Kelsey-Hayes Wheel Co., 3600 Military Ave., Detroit, Mich., manufacturing plant, $2,000,000.

▲ **Pa., Franklin**—PLANT—Hammermill Paper Co., 1442 East Lake St., Erie, plant, constr. depends on Pa. State Hy. Dpt. constr. road, $2,000,000.

▲ **Pa., Midland**—LABORATORY—Rem-Cru Titanium, Inc., (Remington Arms Co., Inc., and Crucible Steel Co. of America), Midland, research laboratory and administration offices, Industry Twp., 5 mi. northeast of here, to exceed $1,000,000.

S. D., Volga—PLANT—Volga Farmers Coop. Creamery, Volga, milk drying plant, $500,000.

▲ **Tex., Dumas**—PLANT—Shamrock Oil & Gas Co., 1st Natl. Bank Bldg., Amarillo, isobutane-thermo cracking gas plant unit, $1,000,000; steel tank farm expansion, $90,000. CD 8/7.

UNCLASSIFIED

▲† **Arizona**—PARK BUILDINGS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., buildings and utilities, $1,823,000; roads and trails, $1,104,000, Organ Pipe Cactus National Monument.

▲† **Arizona**—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $408,000; buildings and utilities, $1,121,000, Petrified Forest National Monument.

▲† **Arizona**—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $725,000; buildings, utilities, $570,000, Canyon de Chelly National Monument.

† **Arizona**—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $126,000; buildings and utilities, $503,000, Coronado National Monument.

▲† **Arizona**—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $753,000; buildings and utilities, $496,000, Navajo National Monument.

▲† **Arizona**—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and trails, $2,740,000; buildings and utilities, $399,000, Saguaro National Monument.

▲† **Arizona**—PARK ROADS, etc.—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C., roads and rails, $433,000; buildings and utilities, $768,000, Sunset Crater National Monument and Wupatki National Monument. CD 3/6.

Conn., Hartford—STADIUM, etc.—City, City Hall, stadium, field house, track and skating rink, North Meadows, $500,000. Winfred W. DeMay, city engr.

▲† **Georgia**—PARK BUILDINGS, etc.—National Park Services, Dpt. Interior, 19 and C Sts. N. W., Wash. 25, D. C. buildings and utilities, $414,000; roads and trails, $1,218,000, Kennesaw Mountain National Battlefield Park.

▲ **Ill., Chicago**—STREET LIGHTS—City, Div. Streets & Sanitation, Lloyd N. Johns, comr., City Hall, bond election Nov. 6, street lights, $25,000,000. CD 11/6/53.

▲† **Maine**—RADIO STATION—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., Naval Radio Station, utilities and land acquisition, $2,450,000.

▲ **Md., Baltimore**—OFF-STREET PARKING FACILITIES—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, bond election Nov. 6, off-street parking facilities, $5,000,000.

▲ **Mass., Taunton**—SPORTS ARENA—Taunton Greyhound Assoc., Inc., Joseph Linsey, pres., Williams St., dome covered sports arena, $2,000,000. Linenthal & Becker, 16 Lincoln St., Boston, consult. engrs.

▲ **Missouri**—RURAL DISTRIBUTION LINES—Ozark Border Electric Co-operative, Poplar Bluff, 180 mi. electric distribution line and system imprvs., $1,400,000. CD 8/10/50.

▲ **Nebraska**—RURAL DISTRIBUTION LINES—Southwest Public Power Dist., Palisade, rural distr. lines, Hitchcock Co. $1,185,000. Flora Eng. Co., 56 and Holly St., Box 234, Denver, Colo., consult. engr. CD 9/12.

▲ **Nebraska**—RURAL DISTRIBUTION LINES—York County Rural Public Power Dist., York, 319 mi. rural distr. line; 15 mi. 69 kv transmission line and general sys. imprvs., York Co. $2,050,000.

North Carolina—RURAL DISTRIBUTION LINES—Edgecombe-Martin County Electric Membership Corp., Tarboro, 30 mi. rural distr. lines, sys. imprvs., Edgecombe Co. $500,000.

▲ **Ont., Toronto**—PARK PROGRAM—Municipality of Metropolitan Toronto, 67 Adelaide St. E., park program, Toronto Island, $14,500,000. Marshall, Macklin & Monaghan, 154 Merton St., consulting engineers to prepare topographic plan of the islands.

Steel for the Senators

The Capitol dome provides an imposing backdrop for Bethlehem ironworkers erecting steel for the additional Senate Office Building. Completion of the new structure with its 329 office rooms will mean larger office suites for Senate members. Other much-needed facilities to be provided include committee hearing rooms, a 500-seat auditorium, a spacious cafeteria, a parking garage and gymnasium.

E-shaped in plan, the building is seven stories high, plus a basement and sub-basement, and totals 392,000 sq ft in floor area. Its white marble exterior and over-all architectural design are in harmony with other government buildings.

Location of the new building is just across First Street from the existing Senate Office Building, between Constitution Avenue and C Street, only a short stroll from the Capitol.

Architect: J. George Stewart, Architect of the Capitol; Associate Architect: Otto R. Eggers; General Contractor: The George Hyman Construction Co.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 1 Connecticut October 2, 16 Massachusetts

STREETS AND ROADS

October 1 Connecticut October 2 Massachusetts

▲† **Mass., Falmouth**—STORAGE FACILITIES—BA On Or About 10/16—U. S. Eng., 150 Causeway St., Boston, Zone 14, addnl. storage facilities for ordnance storage area, incl. 7 concrete storage magazines, assembly and check-out bldg., security guard house, utilities, Otis Air Force Base, ENG-19-016-57-65, $1,500,000-$1,750,000. Plans deposit $25. CD 8/21.

HEAVY CONSTRUCTION—LB & CA

▲ **MAINE**—State Hy. Comn., State House, Augusta, Me.—**W. H. Hinman, Inc.**, North Anson, Me. CA **$1,480,495.** (3 bidders) c. conc., b. conc. 2.824 mi., 3 bridges, F.A. Projs. Nos. IN-01-1(15) and ING-01-1(16), U.S. 1, Freeport, CD 3/28;
Me.—**Forest Frederick**, Pittsfield, Me. CA **$230,976.** (3 bidders) b. conc. 2.319 mi., F.A. Secondary Proj. S 0315 (3), "157" East, Millinocket-Medway. Bids Sept. 12.

▲† **The Lane Constr. Corp.**, Drawer 911, Meriden, Conn. CA **$1,168,728**, est. $1,209,737. National Guard taxiway and parking apron, Otis Air Force Base, ENG-19-016-57-20, FALMOUTH, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. CD 8/27, under LB.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, 11 Beacon St., Boston, Mass. CA Approx. **$1,500,000.** LIBRARY, WELLESLEY, MASS. Wellesley College, Wellesley, Mass. CD 2/23/55.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 9 New Jersey

STREETS AND ROADS

October 2 Maryland October 11 Pennsylvania

▲† **New York**—BA 10/11—U. S. Eng., Engineer Park, Niagara and Bridge Sts., Buffalo, Zone 7, constr. Grasse River lock approach channel in St. Lawrence Seaway, St. Lawrence River for St. Lawrence Seaway Development Corp., CIVENG-30-023-56-71. CD 8/27.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,
N. Y.—**D. W. Winkleman Co., Inc.**, 205 Harrison St., Syracuse, N. Y. CA **$5,721,391.** paving, structural work on State Fair Blvd. and Rte. 48, west side Onondaga Lake, Onondaga Co.;
N. Y.—**H. L. Baughman, Inc.**, 1240 Jefferson Rd., Rochester, N. Y. CA **$1,090,312.** portion of Rte. 17 incl. new bridge and interchange, Elmira, Chemung Co.;
N. Y.—**Draicchio & Caradori Co., Inc.**, 3 Lombardy St., Lancaster, N. Y. CA **$1,777,641.** relocation and reconstr. section of Rte. 14A and reconstr. of Rte. 54, Yates Co. Grand total $8,589,344. CD 9/18, under LB.

▲ **Hendrickson Bros.**, 63 N. Central Ave., Valley Stream, N. Y. CA **$2,837,205.** (1 bidder) Contr. No. 1002-2-NHP-3, lateral sewers, Lake Success-Herricks area, town of North Hempstead, Sewage Collection Dist., No. 2-NHP, MINEOLA, N. Y. County Executive, Nassau Co., Old County Court House, Mineola, N. Y. CD 821, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,
Pa.—**Hempt Bros.**, R. D. 1., Camp Hill, Pa. LB **$1,230,282.** (6 bidders) three span concrete bridge to carry Rte. 15 over Rte. 94 with suitable ramps constructed to permit access from town of York Springs into the new route, four-lane rein.-con. pavement with earth and concrete divisor, 3.36 mi., relocation between Deardorffs Mills and Heidlersburg, U. S. Rte. 15, Adams Co.;
Pa.—**David Goldberg & Sons**, Pennsylvania Ave., Uniontown, Pa. LB **$203,670.** (4 bidders) repairing, reconstr. existing bridge over Monongahela River at Masontown, 0.27 mi. T.R. 21, Fayette and Greene Counties;
Pa.—**Jos. Futch Constr. Co., Inc.**, 220 Trayor St., Exeter, Pa. LB **$160,524.** (4 bidders) constr. plate girder bridge over Lackawanna River in Old Forge Boro, 0.06 mi., L.R. 40103, Lackawanna Co.;
Pa.—**Blue Mountain Constr. Co.**, Grantville, Pa. LB **$127,960.** (7 bidders) two bridges over Swiftwater Creek east and west of Swiftwater, 0.08 mi., T.R. 940 and 611, Monroe Co.; LB **$103,532.** (5 bidders) two bridges over Buckhill Creek and tributary of Buckhill Creek, southwest of Coveville, 0.2 mi., L.R. 45070, Monroe Co.;
Pa.—**G. H. Litts**, R. D. No. 2, East Stroudsburg, Pa. LB **$136,734.** (4 bidders) constr. 3 bridges, two over Pocono Creek, northwest of Tannersville and one over Bulgers Run, southeast of Tannersville, L.R. 45081 and 45024, Monroe Co. Bids Sept. 14. CD 8/23.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,
Pa.—**Worthington Constr. Co.**, Box 95, Line Lexington, Pa. LB **$1,418,775.** (11 bidders) rein.-con. 24 ft. wide on each side of an earth 20 ft. wide, 2.57 mi., two prestressed precast rein-con. bridge, constr., relocation of twp. roads and service roads from near Berks-Lehigh Co. line west to intersection of L.R. 06136 in Greenwich, Maxatawney and Weisenberg Twps., Berks and Lehigh Counties;
Pa.—**James D. Morrissey, Inc.**, 9119 Frankford Ave., Phila. 14, Pa. LB **$524,341.** (9 bidders) flexible base with bit. surf., 50 ft., 24 ft., 36 ft., relocation of U.S. Rte. 13 which connects Tullytown and Levittown with Morrisville and Yardley, west of Morrisville for a distance 2.13 mi., Falls and Lower Makefield Twps., L.R. 778, Bucks Co.;
Pa.—**A. E. Oblock**, Unity, Pittsburgh 35, Pa. LB **$352,689.** (8 bidders) c.-conc. pavement 24 ft. wide, two channelized hy. intersections consisting of rein.-con., one rein.-con. arch bridge, wid'n. existing pavement with separating traffic islands and median areas, Sandy Twp., near DuBois, 2.49 mi. from intersection of L. R. 60 and 338, northeast T.R. 322, Clearfield Co.;
Pa.—**Union Paving Co.**, No. 1 East Wynnewood Rd., Wynnewood, Pa. LB **$215,515.** (6 bidders) surf. existing pavement with bit. surf. 43 to 117 ft. in width, 1.35 mi. Delaware Ave. and Dyott and Norris Sts., city of Philadelphia, L.R. 67047, Philadelphia Co. Bids Sept. 14. CD 8/23.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Md.—**Wright Contg. Co.**, Odenton, Md. LB **$2,617,438.** (5 bidders) surf. 6.255 mi. divided hy. US 240 M-533-1-320 and M-485-2-320, Montgomery Co.;
Md.—**Williams Contg. Co.**, Box 145, Baltimore 20, Md. LB **$1,959,769.** (3 bidders) surf. 3.571 mi. State Rte. 139, incl. intersection and connecting roadways, B 678-1-420, Baltimore Co. Bids Sept. 18. CD 9/5.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y. CA Est. **$75,000,000.** 46 story, glass, metal OFFICE with sub-basement GARAGE and helicopter landing at Park and Lexington Aves., 53 and 54 Sts., NEW YORK, N. Y. Vincent Astor, 152 W. 42 St., New York, N. Y. Carson & Lundin, 50 Rockefeller Plaza, New York, N. Y., archts.

▲ **W & Z Builders**, 57 Bryant Ave., Bloomfield, N. J. CA Est. **$1,000,000.** 50 HOMES to be known as "Jamesburg Gardens", Buckley Ave., Monroe Twp., JAMESBURG, N. J. Ralph R. Zarra, 57 Bryant Ave., Bloomfield, N. J. Edwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **B. J. Lucarelli Co., Inc.**, 22 Orchard St., Jersey City, N. J. CA, **$1,000,000.** MFG. PLANT addn., LIVINGSTON, N. J. Chatham Electronics Div., The List Industries Corp., 630 W. Mt. Pleasant Ave., Livingston, N. J. Engineers Co., Inc., 487 Orange St., Newark, N. J., engr.

▲ **Curley Homes Inc.**, 54 Broad St., Red Bank, N. J., Owner Builds, **$3,000,000.** 90 HOMES, Holland and Red Hill Rds., MIDDLETOWN, N. J. Ralph Fournier, 9929 Manchester St., St. Louis, Mo., archts.

▲ **Milton Hartmann**, Jockey Hollow Estates, Western Ave., Morristown, N. J., Owner Builds. **$3,600,000.** 250 HOMES, Jockey Hollow Section, Jockey Hollow Estates, MORRISTOWN, N. J. Donald S. Rotwein, 94 Van Ness Court, Maplewood, archt.

▲ **Urban Redevelopment Corp.**, 83 Paterson St., New Brunswick, N. J., Owner Builds. **$12,000,000.** SHOPPING REDEVELOPMENT, incl. retail shops, department store, 100-room hotel, auditorium, office and parking areas called "Plaza Center" adjoining Housing Authority Development at George St. and Memorial Park, NEW BRUNSWICK, N. J. Terrano & Gardner, 35 W. 53 St., New York, N. Y., archts. D. Dodd McHugh, 23 E. 26 St., New York, N. Y., engr.

▲ **Calabro Constr. Co. Inc.**, 401 Park Ave. S., Linden, N. J. CA Est. **$1,000,000.** PLANT and OFFICE, E. Meadow Ave., RAHWAY, N. J. Regina Corp., 39 Central Ave., Newark, N. J. The J. & E. Warn, 2335 Florence St., Cincinnati, O., archts. Awarded Sept. 12.

▲ **Mullan Contg. Co.**, 3945 Greenmount Ave., Baltimore 18, Md. LB **$2,760,000.** Arbutus Junior High SCHOOL, Arbutus, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids Sept. 18. CD 9/12.

▲ **E. L. Daniels**, 1511 N. Quincy St., Arlington, Va., LB **$2,008,084**, est. $1,000,000. (5 bidders) 5 story Columbia HOSPITAL for Women addn., WASH., D. C. Columbia Hospital for Women, 25 and L Sts. N.W., Wash., D. C. Bids Sept. 18. CD 8/9.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 5 Tennessee

STREETS AND ROADS

October 5 Tennessee

▲† **Georgia and South Carolina**—BA About 1/18—U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Hartwell Dam and appurtenant works, Hartwell Proj., Savannah River, near Hartwell, $10,000,000 appropriated 1956. CD 9/14/55.

BUILDINGS—BA

▲ **Ga., Savannah**—HOUSING—BA 1/15—Housing Authority of Savannah, 200 E. Broad St., 337 housing units, $3,000,000. Levy & Kiley, 410 E. Bay St., archts.

HEAVY CONSTRUCTION—LB & CA

▲† **McWilliams Dredging Co.**, Box 584, New Orleans, La. LB **$1,176,363.** (4 bidders) Whiskey Bay Pilot Channel extension, consisting of 7,257,000 cu. yd., St. Martin and Iberville Parishes, Inv. 57-46, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids Sept. 13. CD 9/5.

▲† **Lewis Constr. Co. & Assoc.**, Box 16, Goldsboro, N. C. CA **$1,002,635**, est. $1,066,269, (7 bidders) control tower and outlet works Buckhorn Reservoir, Perry Co., CIVENG-15-029-56-8, KENTUCKY. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids Sept. 11, awarded Sept. 13. CD 9/14, under LB.

BUILDINGS—LB & CA

▲ **Del E. Webb Constr. Co.**, S. 23 Ave., Phoenix, Ariz., CA, Est. **$1,800,000.** HOTEL, Hollywood and Highland Blvds., HOLLYWOOD, FLA. Flamingo Hotels, Inc., 2501 E. Van Buren St., Phoenix, Ariz.

▲ **Bush Housing Corp.**, Flat Iron Bldg., Norfolk, Va., CA, **$3,789,000.** 370 APARTMENT UNITS, Capehart Housing, Restone Arsenal, HUNTSVILLE, ALA. U. S. Eng., 2301 Grant St., Mobile, Ala. Bids June 27, awarded Sept. 14. CD 7/3, under LB.

▲† **J. A. Jones Constr. Co.**, 133 Ellis St. N.E., Altanta, Ga., CA **$1,109,484.** structural FABRICATION BLDG. addn., Redstone Arsenal, HUNTSVILLE, ALA. U. S. Eng., 2301 Grant St., Mobile, Ala. CD 8/29.

▲ **Struck Constr. Co.**, 147 N. Clay St., Louisville, Ky. CA **$2,500,000.** (7 bidders) MANUFACTURING BLDG. BOILER ROOM, paving, LEXINGTON, KY. Square D Co., 6060 Rivard St., Detroit, Mich. Bids Aug. 28, awarded Sept. 18. CD 8/24.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 3 Michigan

STREETS AND ROADS

October 2 Ohio October 3 Michigan

BUILDINGS—BA

▲ **O., Cincinnati**—GARAGE, etc.—BA 10/30—City, City Hall, garage, storage depot, pipe yards for Water Works Dpt. $2,800,000. Plans deposit $40. Woodie Garber & Assoc., 104 Wm. Howard Taft Rd., archts. Hixon, Tarter & Assoc., 2320 Victory Parkway, structural engrs., Bodenstein & Schuster, 9th and Main Sts., consult. engrs. CD 7/29/55.

BUILDINGS—LB & CA

▲ **H. L. Yokes Co.**, 1000 Wayside Rd., Cleveland 19, O. CA **$2,000,000.** design and construct 6 story approx. 50,000 sq. ft. OFFICE, 2800 Euclid Ave., CLEVELAND, O. Halley H. Lipp, 2829 Euclid Ave., Cleveland 15, O. Awarded Aug. 27.

▲ **George A. Fuller Co.**, 1st Natl. Bank Bldg., Pittsburgh, Pa., CA (8 bidders) general constr. LAMP DEVELOPMENT LABORATORY, Nela Park Works, CLEVELAND, O. Total est. **$4,000,000-$5,000,000.** General Electric Co., River Rd., Schenectady, N. Y. Bids Aug. 31. CD 8/14;
Smith & Oby Co., 6107 Carnegie St., Cleveland, O., CA mechanicals (Cleveland, O.);
Hatfield Electric Co., 3855 Carnegie St., Cleveland, O., CA electrical (Cleveland, O.).

▲ **A. W. King Co.**, 5301 E. Outer Dr., Detroit, Mich. Owner Builds. **$4,750,000.** Harper Beach Subdivision, 303 brick HOUSES, CLINTON, MICH.

▲ **School Dist. 97**, 122 Forest Ave., Oak Park, Ill., rejected bids Aug. 9, Longfellow Grade SCHOOL addn., 315 Jackson Blvd., OAK PARK, ILL. LB **$1,046,902.** CD 8/21, under LB.

▲ **Miller-Davis Co.**, 1029 Portage St., Kalamazoo, Mich., CA **$1,249,000.** DORMITORIES, Ferris Institute, BIG RAPIDS, MICH. State, Clair Taylor, secy., State Bd. Educ., Capitol, Lansing, Mich. CD 8/30, under LB.

▲ **Christman Co.**, 408 Kalamazoo Plaza, Lansing, Mich., CA **$2,961,507.** general constr. self-liquidating HOUSING for married students, Michigan State University, EAST LANSING, MICH. Michigan State University, Karl D. McDonel, secy., East Lansing, Mich. CD 8/21, under LB.

▲ **Rose-Hill Realty Co.**, 17300 Grand River St., Detroit, Mich. Owner Builds. **$1,700,000.** Pleasant Acres, 100 brick ranch HOMES, 10 Mile and Marilyn Rds., WARREN, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 2 Iowa October 9 Kansas

STREETS AND ROADS

October 2 Iowa October 9 Kansas

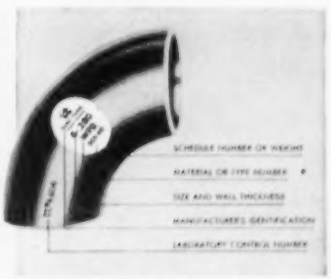
(Continued on page 100)

THE WELDER KNOWS he's getting the exact fitting specified on the blueprint because the fitting is clearly marked with all designations.

COMPLETE... PERMANENT IDENTIFICATION!

THE STOREROOM WORKER KNOWS he is selecting the right fitting when it's marked "TUBE-TURN". The fitting bears complete information called for on the requisition.

THE DESIGNER KNOWS that his specifications will be carried out precisely where his drawings call for "TUBE-TURN products". At every stage . . . from purchasing to pipe installation, people KNOW what they're getting and using.



CLEARLY MARKED. TUBE-TURN® Welding Fittings are completely identified as to dimensional and metallurgical facts. Here is your assurance that you have the RIGHT fitting, and that it has passed Tube Turns' rigid inspection and quality control.

This is just *one* reason why you should specify the leading brand of fittings and buy from your trusted Tube Turns' Distributor.

TUBE TURNS

LOUISVILLE 1, KENTUCKY

A Division of National Cylinder Gas Company

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Cleveland • Detroit • Chicago • Kansas City • Denver • Los Angeles • San Francisco • Seattle • Atlanta • Tulsa • Houston • Dallas • Midland, Texas

®"TUBE-TURN" and "tt" Reg. U. S. Pat. Off.

NATION-WIDE
BOND
SERVICE
for contractors

. . . based on more than 70 years' experience

Prompt handling of:
BONDS—Bid and Performance
EQUIPMENT FLOATERS
CASUALTY INSURANCE
VALUABLE PAPERS INSURANCE

American Surety Company
Agents and Brokers Everywhere
100 Broadway, New York 5

Servicised
CORRUGATED CLOSURE STRIPS

FOR ALL TYPES OF CORRUGATED CONSTRUCTION

Seal out weather elements . . . prevent drafts and heat loss in any type of corrugated sheet with Servicised Closure Strips. Three types—rubber composition, asphalt and KORK-PAK. A complete line to fit corrugations of steel, asbestos cement, aluminum roofing and siding, wire glass and Mississippi corrugated glass. KORK-PAK type is non-sagging, resilient and requires less fastening.

Write for complete details and prices. Ask for the complete Servicised Catalog.

SERVICISED PRODUCTS CORPORATION
6051 W. 65th ST., CHICAGO 38, ILL.

(Continued from page 98)

▲† **Missouri**—BA 10/16—U. S. Eng., 1800 Federal Office Bldg., 911 Walnut St., Kansas City 6, Mo., constr. embankment, channel excav., access roads, Stage I Pomme de Terre Dam and Reservoir, near Hermitage, ENG-57-25, $1,000,000-$2,000,000. CD 9/12.

▲ **Tex., Galveston**—BA 10/16—Bd. Navigation & Canal Comrs., Galveston County Navigation Dist. No. 1, City Hall, Contr. 3, Pelican Island Causeway bridge over Galveston Channel. $4,500,000. Parsons, Brinckerhoff, Hall & Macdonald, Bankers Mortgage Bldg., Houston, engrs. CD 12/9/54.

BUILDINGS—BA

▲ **Neb., Omaha**—CONSTRUCTION CENTER—BA 10/16—Metropolitan Utilities Dist., 18 and Harney Sts., 1 story, 300x400 ft. brick, rein.-conc. construction center, 63 and Oak Sts. $1,350,000. Steele, Michael & Durham, 2962 Harney St., archts.-engrs. CD 10/4/51.

▲ **Tex., San Angelo**—HIGH SCHOOL—BA 11/15—San Angelo Independent School Dist., San Angelo, high school. $2,380,000. Plans deposit $50. Caudill, Rowlett, Scott & Assocs., 425 S. Main St., Bryan, archts.

BUILDINGS—SLC

▲ **Tex., Beaumont**—SHOPPING CENTER—Gateway Shopping Center, c/o Irving R. Klein & Assocs., archts., 1317 Austin St., Houston, soon lets contract, shopping center, $2,500,000. Walter P. Moore, 2 Pinedale St., and J. Wayne Holland, 4209 Leeland St., Houston, engrs. CD 9/5.

HEAVY CONSTRUCTION—LB & CA

▲ **H. J. Hoppel**, 5501 E. Admiral St., Tulsa, Okla., LB $1,112,440, est. $1,195,000. Mingo Valley sewage treatment plant, Cont. SA-55-6, TULSA, OKLA. City, City Hall, Tulsa, Okla. Bids Aug. 28. CD 8/2.

BUILDINGS—LB & CA

▲ **Barbarossa & Sons**, St. Cloud, Minn. and **Nodlund Constr. Co.**, Alexandria, Minn. LB $1,289,190. (3 bidders) Sect. A, sanitary sewers, Trunk Sewer Imprvt. No. 3, GOLDEN VALLEY (P. O. MINNEAPOLIS), MINN. Village, R. W. Owens, clk., Golden Valley, Minn. Bids Sept. 14. CD 8/28.
Lametti & Son, 211 N. Pascal St., St. Paul, Minn. LB $266,970 (4 bidders) Sect. B, sanitary sewers, Trunk Sewer Imprvt. No. 3 (Golden Valley, Minn.).

▲ **Normandy School Dist. Bd. Educ.**, Ward E. Barnes, supt. Schools, 7837 Natural Bridge Rd., Normandy 21, Mo., rejected bids Aug. 29, 3 story, brick, steel concrete, masonry SENIOR HIGH SCHOOL, St. Charles Rock and Lucas and Hunt Rds., NORMANDY (ST. LOUIS 21 P. O.), MO. CD 9/7, under LB.

▲ **Baukol Constr. Co.**, 901 N. 6 St., Grand Forks, N. D. CA Est. $1,000,000. multiple DWELLING PROJ., GRAND FORKS, N. D. Arrowhead Properties, Inc., c/o Wells & Denbrook, archts., 1701 Cherry St., Grand Forks, N. D.

▲ **Worth Builders**, Box 6490, Fort Worth, Tex. CA $1,680,670. construct and finance, Capehart family HOUSING, Gray and Killeen Air Force Bases, ENG-41-443-56-83, KILLEEN, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids July 17. CD 7/23, under LB.

▲ **Jack Dempsey & Bobby Manziel**, Tyler, Tex. cancelled bids, SPORTS AUDITORIUM, TYLER, TEX. Est. $1,000,000. CD 1/31.

▲ **Southwestern Engineering Co.**, 5000 District Blvd., Los Angeles, Calif. CA Est. $8,000,000-$10,000,000. design and construct REFINERY, incl. installation, composed of fluid catalytic cracker, H F alkylation plant and a platformer, GALLUP, N. M. El Paso Natural Gas Products Co., E P N G Co. Bldg., El Paso, Tex. CD 4/26.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
October 4 Nevada — October 17 California
STREETS AND ROADS
October 4 Nevada — October 9 Washington
October 17, 18, 24 California

BUILDINGS—BA

▲ **Wash., Tacoma**—HOUSING—BA 10/16—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 110 to 150 unit family housing, McChord Air Force Base, Inv. 57-30. Plans deposit $50. Extended date. CD 8/23.

HEAVY CONSTRUCTION—LB & CA

▲ **Butler Constr. & Eng. Co.**, 3419 13 Ave. S.W., Seattle, Wash., CA, $1,919,705. Broad St.-Aurora Ave. underpasses, SEATTLE, WASH. City, County-City Bldg., Seattle, Wash. Bids Sept. 5, awarded Sept. 12. CD 9/10, under LB.

▲ **Guy F. Atkinson Co.**, 10 W. Orange Ave., South San Francisco, Calif., CA $8,283,429, dam on North Clackamas River and plant addn. at Faraday, Clackamas Co., OREGON. Portland General Electric Co., 621 S.W. Alder St., Portland, Ore. Awarded Sept. 14. CD 8/22, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
Charles L. Harney, Inc., 575 Berry St., San Francisco, Calif., CA, $1,583,505. grading, paving 2 mi. Bayshore Freeway from Willow Road in Menlo Park to San Mateo-Santa Clara Co. line incl. 4 bridges, San Mateo Co. Bids Aug. 29, awarded Sept. 11. CD 9/4.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Fredericksen & Kasler, 212 13 St., Sacramento, Calif., CA, $3,435,889. grading, paving, structure, 5 bridges, 1 pedestrian undercrossing, 1 pedestrian overcrossing on U.S. 101, Los Angeles Co. Bids Aug. 30. CD 9/7, under LB.

▲ **Baker-Anderson Corp.**, 12420 Bloomfield St., Norwalk, Calif., LB $4,930,000, est. $4,500,000. (6 bidders) North Central outfall sewer Section A and Section B, Unit II, LOS ANGELES, CALIF. Bd. P. Wks., City Hall, Los Angeles, Calif. Bids Sept. 12. CD 9/10.

▲ **Ukropina-Polich-Kral**, 201 E. Las Tunis Dr., San Gabriel, Calif., LB $1,415,377. Sch. I and II, 6.9 mi. 42- to 60-in. Pomona-Walnut-Rowland water pipe line, POMONA, CALIF. Pomona-Walnut-Rowland Joint Water Line Comn., 597 S. Thomas St., Pomona, Calif. Bids Sept. 11. CD 8/27.

BUILDINGS—LB & CA

▲† **J. H. Wise & Sons, Inc.**, Box 267, Boise, Idaho, LB $2,643,000 (7 bidders) 150x285 ft. ASSEMBLY and MAINTENANCE BLDG. addn., Aircraft Nuclear Propulsion area of National Reactor Testing Station Proj. AT (10-1-837), ARCO, IDAHO. Atomic Energy Comn., Idaho Operations Office, Idaho Falls, Idaho. Bids Sept. 12. CD 8/20.

▲ **Westinghouse Electric Corp.**, 3 Gateway Center, Pittsburgh, Pa., CA, Total est. $50,000,000. 75,000 kw. generating UNIT, TUCSON, ARIZ. Tucson Gas, Electric Light & Power Co., 35 W. Pennington St., Tucson, Ariz.

▲ **Fluor Corp. Ltd.**, 2500 Atlantic St., Los Angeles, Calif., CA Est. $3,000,000. design and construct, 25,200 bbl. per day RESIDUUM STRIPPER at refinery, EL SEGUNDO, CALIF. Standard Oil of California, 225 Bush St., San Francisco, Calif. CD 8/18/52.

▲ **A. J. Wutzke**, 20252 E. Chapman St., Orange, Calif., CA $1,500,000. 125 DWELLINGS, Tract 2518, GARDEN GROVE, CALIF. B & F Builders, Inc., 11146½ E. Whittier Blvd., Whittier, Calif.

▲ **Pacific Coast Builders**, 1 South Park St., San Francisco, Calif., LB $3,038,000 (6 bidders) 1 story, 156,000 sq. ft. new Tennyson HIGH SCHOOL, HAYWARD, CALIF. Hayward Union High School Dist., 22300 Foothill Blvd., Hayward, Calif. Bids Sept. 12. CD 8/21.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 10 British Columbia

BUILDINGS—BA

▲ **Alta., Calgary**—TOLL—BA 10/9—Alberta Govt. Telephones, 9718 107 St. Edmonton, 8 story bsmnt., 130x150 ft., steel, concrete toll bldg. $2,500,000. Plans deposit $200.

HEAVY CONSTRUCTION—LB & CA

▲ **C. A. Parsons of Canada**, Royal Bank Bldg., Toronto, Ont., CA, $3,663,700. steam generators for steam generating plant east side of Red River, Selkirk, MANITOBA. Manitoba Hydro-Electric Bd., 213-219 Notre Dame Ave., Winnipeg, Man. Awarded Sept. 11.

▲ **Poole Constr. Co. Ltd.**, 10503 109 St., Edmonton, Alta., CA $1,500,000 dam on Long Creek just north of North Dakota border and near Estevan, SASKATCHEWAN, Saskatchewan Power Corp., 1379 Cornwall St., Regina, Sask. Bids Aug. 16. CD 8/8.

BUILDINGS—LB & CA

▲ **J. Gordon Turnbull Inc.**, Brent Bldg., Regina, Sask., CA, Est. $3,500,000. design and construct steel PIPE PLANT, REGINA, SASK. Prairie Pipe Co. Ltd., c/o Fluor Corp. of Canada Ltd., c/o General Delivery, Regina, Sask. Awarded Sept. 5. CD 10/6.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Rosson-Richards Constr. Co. and Brown & Root, Inc.**, 4100 Clinton Dr., Houston, Tex., U.S.A. CA $21,000,000. 177 mi. 20 in. gas pipe line from LaPaz field to refinery at Cardon, VENEZUELA. Cia Shell de Venezuela, Edificio Shell, San Bernardino, Caracas, D. F., Venezuela. CD 7/11.

▲ **Velutini & Bergamin**, Sociedad a Camejo 16, Caracas, D. F., Venezuela, CA $2,545,092, 2/5 mi. sect. Avenue of the Armed Forces, incl. cloverleaf, three split-level crossings and bridge over Guaire River, CARACAS, VENEZUELA. Ministry P. Wks., Caracas, Venezuela.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲† **Oman-Farnsworth-Goysa**, Madrid, Spain, CA $3,333,000. GEN-109, ammunition storage centers, MORON, TORREJON AND ZARGOZA, SPAIN. Bureau Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N. W., Wash., D. C., U. S. A. Bids Aug. 29. CD 94, under LB.

(Proposal Advertisement see pp. 112 to 115)

WHERE SAFE WALKWAYS COUNT...

Gary

provides tailor-made, extra strong, safe walkways . . .

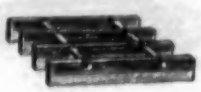
WELDED OPEN STEEL FLOORING

In appearance, design, construction—Gary Welded Grating is outstanding for all open steel flooring and stair tread installations. One piece construction, with main bearing bars and *hexagonal cross bars*, resistance-welded means stronger, longer lasting flooring. Tops of all bars are flush and it is self-cleaning, providing the utmost in safety. Main bars on $1\frac{3}{16}$" centers and cross bars on 4" centers, in panels 36" wide and lengths to 40'0". Also available in a variety of special types with spacing of bars to suit your requirements. Gary Welded is tailor-made, factory-fabricated to your specifications—a big saving for you in installation time and expense. For illustrations of Gary Grating and Stair Treads in use and complete description of all Gary products, send for Catalog E-96.

Standard Steel Spring Division

ROCKWELL SPRING AND AXLE COMPANY

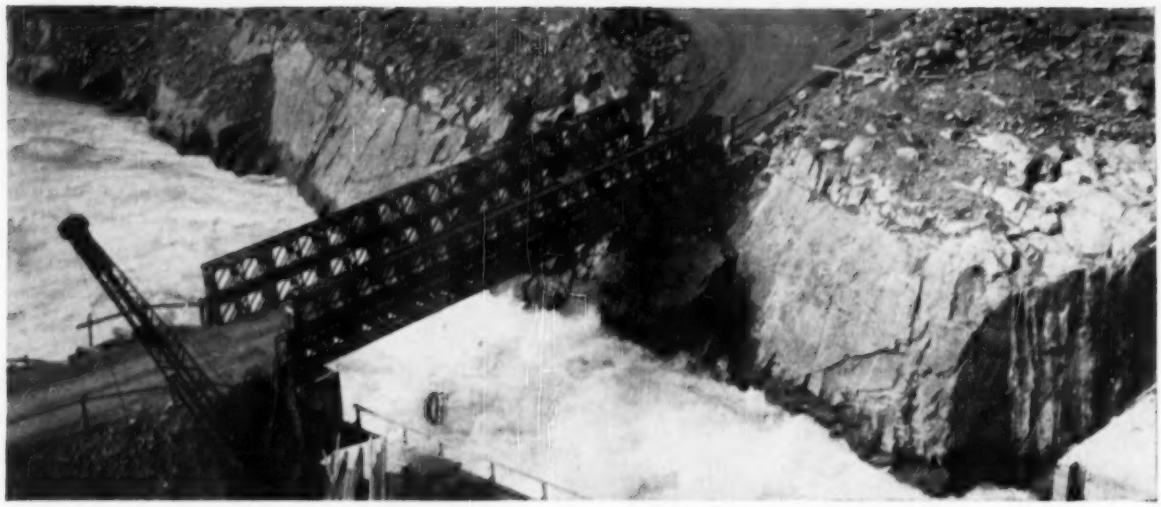
4004 East Seventh Avenue • Gary, Indiana



FREE SAMPLE

Write us on your company stationery. We'll send handy paper weight size sample.

BAILEY BRIDGING



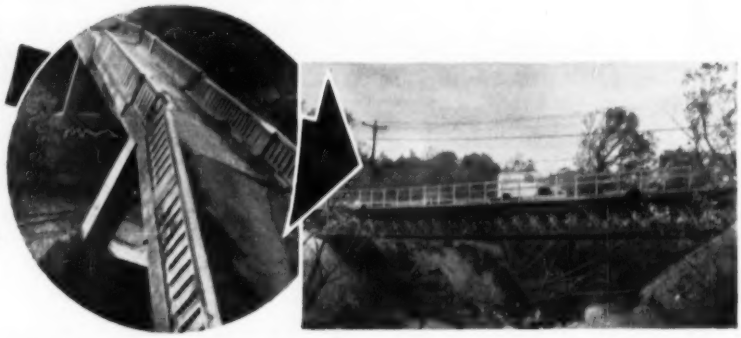
● Application of a double-double Bailey Bridge to provide an easily constructed, and 100% salvageable access bridge on construction project. Contractors are finding Bailey Bridging an indispensable supplement to their construction plant.

BAILEY BRIDGES THE GAP

Construction has been speeded under all conditions by versatile Bailey Bridges. Providing the engineer with an easy-to-handle and pre-designed structure for spanning rivers or gorges, the prefabricated Bailey components may be assembled in various combinations to form trusses having a higher strength-weight ratio than any other type of bridging material. It is ideally suited for spans up to 200 feet, and loads up to 100 tons. Bailey Bridging not only lends itself for emergencies and rush schedules, it can also be used for permanent bridges, for trestles, for long span building girders, loading ramps, etc. Note the following Bailey Bridge features.

- **COMPLETELY FLEXIBLE WITH REGARD TO LOADS OR SPANS.**
- **NO PARTS TOO HEAVY FOR MANHANDLING.**
- **THIS LOW COST BRIDGE IS AVAILABLE FROM STOCK.**

● Right:—Application of two-lane, flush deck Bailey Bridge as an emergency replacement for storm damaged permanent structure. Since no extensive design is required, municipal and state highway departments now have a facility for getting traffic rolling within hours where bridges have been damaged or carried away.



U. S. Agent **MASON & BACON Co. Inc.**
5TH FLOOR, McCLURE BUILDING
FRANKFORT, KENTUCKY. TEL. 4-8289

WRITE FOR ILLUSTRATED LITERATURE

CONTRACTORS SERVICE LIMITED

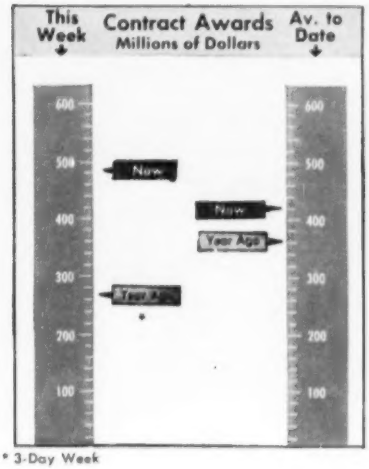
38 Commercial Road, Toronto, Canada

Sole Distributors for Bailey Bridging in USA & Canada

WORLD LICENCEES FOR MANUFACTURE AND SALE. THOS. STOREY (ENGINEERS) LTD. STOCKPORT. ENGLAND.

Construction Scoreboard

Activity this Week



* 3-Day Week

AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 39 wks 1956	Chge %
	$ millions		
Federal	$43.0	$1,320.9	+2
State and Municipal	132.1	4,852.6	+20
Total Public	175.1	6,173.5	+16
Total Private	308.3	10,334.1	+18
U. S. Total	$483.4	$16,507.6	+17
By Type of Work			
Waterworks	$3.2	$262.0	+28
Sewerage	18.5	456.2	+52
Bridges	9.8	450.6	+26
Highways	60.6	1,830.1	+10
Earthwork, Waterways	13.8	578.5	+42
Buildings:			
Public, Excl. Housg.	30.7	1,541.6	+18
Public Housing	12.0	244.8	+11
Private Housing	55.8	4,252.8	−11
Commercial	115.6	1,412.4	+11
Industrial	129.9	4,147.8	+102
Unclassified	33.5	1,330.8	−15
U. S. Total	$483.4	$16,507.6	+17

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

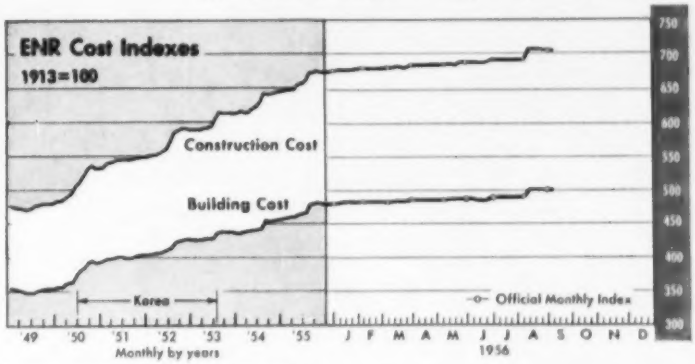
NEW CAPITAL FOR CONSTRUCTION

	Week of Sept. 20 1956	Cum. 38 wks '55-'56	Chge '55-'56
	$ millions		%
Corporate Securities	$235.9	$3,715.3	+49
State and Municipal:			
All Except Housing	102.5	3,296.7	+10
Housing	...	42.3	−41
Federal Loans	...	125.7	+20
Federal Aid	...	1,070.9	+25
Total Nonfederal	$338.4	$8,250.0	+26
Federal Appropriations:			
In U. S.	$...	$3,460.3	+2
Outside U. S.	...	15.9	−81
Total New Capital	$338.4	$11,726.2	+17

Cost Indexes as of Now

ENR INDEXES (1913 = 100) 20-cities' average	1956	Percent Change from last Month	Year
Construction Cost	703.87	−0.2	+4.5
Building Cost	499.53	−0.2	+4.1

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850. 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



BACKLOG OF PROPOSED HEAVY CONSTRUCTION

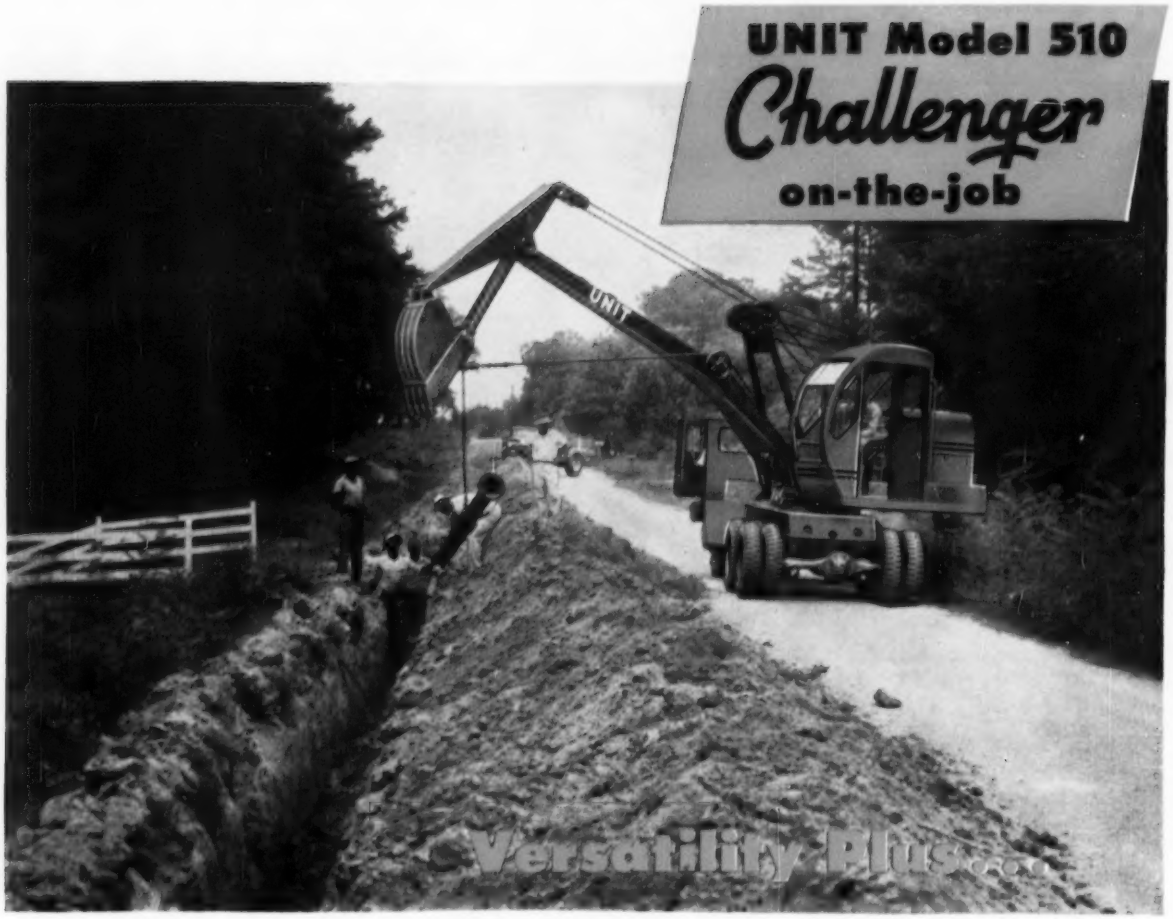
	Aug. 31, 1956 (millions)	Percent Change from last Month	Year
Total U. S. (ENR reported)	$101,656	+1.3	+16.5
By Ownership—			
Private	43,332	+0.8	+18.7
State & Municipal	44,795	+0.5	+16.4
Federal	13,529	+5.6	+10.4
By Type of Work—			
Waterworks	2,088	+1.1	+10.8
Sewerage	3,102	+0.4	+4.3
Bridges	2,985*	+0.4	+6.8
Highways	11,708	+0.7	+4.7
Earthwork, Waterways	11,269	+0.2	+18.5
Public Buildings	18,087	+1.0	+14.6
Industrial Buildings	16,014	+1.0	+23.3
Commercial Buildings	17,838	+1.2	+20.9
Unclassified, Private	9,391	−0.2	+8.1
Unclassified, Public	9,174	+6.9	+37.0
By Regions—			
New England	5,741	+3.2	+15.1
Middle Atlantic	21,366	+0.7	+11.6
South	12,118	+1.7	+14.7
Middle West	17,803	+1.2	+16.2
West of the Mississippi	23,541	+1.2	+9.9
Far West	21,087	+1.3	+33.3

*Includes private bridges, $90 million.

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1956 August (millions)	8-Month	Percent Change from '55 Mo.	Year Cum.
Total U. S. (ENR reported)	$2,153	$17,161	+0.4	+16
By Ownership—				
Private	830	8,950	−44	+26
State & Municipal	565	6,613	+67	−6
Federal	758	1,568	+132	+145
By Type of Work—				
Waterworks	42	280	−56	−27
Sewerage	50	372	+183	+48
Bridges	22	325**	+100	−46
Highways	181	1,013	+409	−70
Earthwork, Waterways	49	516	−63	+14
Public Buildings	342	3,238	+64	+70
Industrial Buildings	316	4,055	−50	+52
Commercial: Mass Housing	239	2,323	−49	+5
Other Bldg.	243	1,822	+82	+25
Unclassified, Private	32	750	−87	+44
Unclassified, Public	637	2,437	+286	+274

**Includes private bridges, $13.5 million.



UNIT 3/8 yd. Trenchoe *"Pinch Hits"* for Crane on a Pipe Lifting Job

On pipe line construction jobs, the UNIT Challenger provides "Double Duty Performance" . . . It trenches . . . picks up pipe strung along the side . . . positions pipe for permanent installation . . . then backfills. UNIT Challenger is ideal because it has a full 360° swing . . . and the FULL VISION CAB gives unmatched visibility *on all sides*. It will pay you to investigate such UNIT features as **One-piece-cast main machinery case . . . Modern transmission design . . . Alloy steels and forgings . . . Involute splines . . . Force feed lubrication . . . Straight-in-line engine mounting . . . Hydraulic actuated clutches . . . Full floating, trunnion mounted taper drums . . . Torque Converter . . . Safety promoting Full Vision Cab** — and many other advanced features. Write for copy of Bulletin C-800.

UNIT CRANE & SHOVEL CORP.

6315 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U.S.A.

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

A 8550-1PC

Government Aids Low-Cost Housing

Sensitive to Democratic charges that tight money policies are working hardships on homebuilders and potential home buyers, the Eisenhower Administration last week took four steps to relieve the pinch.

Two of the moves will make secondary market operations of the Federal National Mortgage Assn. more attractive to builders and lenders.

Another action reduces the downpayment on low-cost housing where the mortgage is insured by the Federal Housing Administration.

The fourth step is designed to make available to savings and loan associations more funds to make mortgage loans.

• **Help from Fannie Mae**—Of the housing changes announced by the White House, the most significant seems to be the increased reliance the Administration is placing on the Federal National Mortgage Assn., popularly known as "Fannie Mae."

The agency acts as a secondary mortgage market, purchasing mortgages from the original lenders so that the lenders can use the proceeds to make new loans. Since July 1, Fannie Mae has made advance commitments to purchase mortgages at 92 cents on the dollar. (A bank or other lender would sell a $10,000 mortgage to Fannie Mae for $9,200.)

Now, Fannie Mae is upping the price it will pay. Instead of 92 cents on the dollar, the agency now will pay 94. This will encourage builders and lenders to make more mortgage loans, the Administration feels.

To make it still more attractive for lenders to turn to Fannie Mae, the Administration is lowering the amount of stock a lender must buy in the association when he sells a mortgage.

In the past, a lender had to buy Fannie Mae stock in an amount equal to 2% of the mortgage before the agency would buy the paper. Now the mandatory stock percentage has been trimmed to 1%.

• **Lower downpayment**—The third "liberalizing" move drops the downpayment on FHA-insured low-cost homes ($9,000 or less) from 7% of the purchase price to 5%. Veterans Administration housing loans are not affected, and downpayments are unchanged on FHA mortgages for homes costing more than $9,000.

The fourth step affects savings and loan associations. The Federal Home Loan Bank Board will permit these associations to borrow up to 12½% of their share capital—enabling them to get more loan funds—instead of the present 10% limit.

• **Will it help?**—There was a wide variety of opinion on the effects of these changes. Housing Administrator Albert M. Cole called the moves "a great boon to the country." Others were less enthusiastic. Some said flatly the effects would be "negligible."

Stanley J. Baughman, head of Fannie Mae, worried publicly about a stampede of mortgage sellers. He says liberalization of Fannie Mae's mortgage purchase terms could nearly double the number of mortgages the agency is buying. (Recently, the agency's purchases have been setting weekly records.)

Officials of the Federal Reserve Board, noncommittal publicly, said privately that they opposed the move for psychological reasons because it appeared to be in conflict with the Fed's anti-inflationary moves, but added that the "economic effects" will be slight.

It was pointed out, for example, that only 27½% of the FHA mortgages currently cover houses in the $9,000 or under bracket, so few units will be aided by lower downpayments.

The Federal Home Loan Bank Board's realization of the borrowing limitation on member institutions was regarded as virtually meaningless.

Savings and loan associations make most of their mortgage loans out of the savings on deposit with the associations. They can also get loan funds by borrowing from the Home Loan Bank System, but not all of them do. Of the 4,300 savings and loan associations only about half have been using the borrowing privilege at all. And, in the entire system, only about 450 had borrowed up to the old 10% limit.

After taking a close look at the package, some builders last week were still dubious about the value of the help they had received.

...And Builders Help Themselves

News of government aid came to homebuilders last week when they were in the midst of an annual effort to help themselves by promoting National Home Week.

The promotion, sponsored by the National Assn. of Home Builders, was nationwide, but enthusiasm was spotty. At one extreme, Dallas and Houston witnessed lavish, well-ballyhooed homebuilders' programs. At the other extreme, Milwaukee builders did little beyond opening some model homes at night—they had staged their big show in July.

The omnipresent tight money market had dimmed hopes at the outset

(Continued on page 106)

in many cities. But, results of the promotion were good in some localities. St. Louis exhibits, for example, drew 75,000 of the curious on opening day—and $1.5 million worth of houses changed hands. Tulsa builders sold half of their display models before the official opening.

From a design standpoint, this year's display homes contained few surprises. Next year's houses will follow the same trends reported in an ENR survey of homebuilders earlier this year (ENR June 28, p. 21).

There is a noticeable shift toward conservative exteriors. Flat roofs and ultra-modern architectural treatments are out of fashion in most areas. The modified ranch-type house predominates with split-levels a strong second. Some Colonial type houses turned up in this year's exhibits, but as a general rule, there were few two-story houses.

New houses will be bigger, again continuing a trend spotted earlier. In many cases, the "minimum" is a house with three bedrooms, 1½ baths. Separate dining rooms are coming back. Living rooms are getting larger and there is strong demand for the so-called "family room." Patios are a big attraction, and in some areas, two-car garages are almost standard.

Air conditioning is a good seller in the South and West. Of Oklahoma City's 21 display houses, for example, all but one were air conditioned. Six were in the $15,000 to $18,000 bracket.

Built-ins and gadgetry are emphasized for sales appeal. Besides major kitchen and laundry appliances, builders now offer such "glamor" items as Hi-Fi, television, intercom systems, food mixers, knife sharpeners and vacuum cleaners.

Prices generally are higher than last year. Despite the higher price tags, builders put their 1956 displays together with an eye on "saleability" rather than "showability," as in 1955.

Part of the higher price trend is due to larger homes and some of the gadgets. But builders said that more important factors are higher land costs, higher wage rates and higher prices on construction materials.

Most model houses in this year's Home Week seemed to fall within the $15,000 to $20,000 price bracket.

The gloom pervading most of the housing industry was belied by gala promotions staged in some localities.

Giveaways marked Home Week in Salt Lake City and Houston.

And, "Mrs. America" toured developments by helicopter for the first three days in Dallas, where about one-quarter of the participating builders hired professional models to conduct potential buyers through the homes.

Cement Prices Up

Eleven major producers plan increases on Oct. 1

At least eleven major producers will increase the price of portland cement on Oct. 1. Most of the increases will be 15 cents a barrel; a few will be higher.

The latest rash of cement price increases is limited so far to eastern and southern mills. However, industry sources see a possibility of corresponding increases later at western mills.

Fourth quarter increases announced so far are mainly at mills that did not increase prices earlier in the year.

However, some mills will be posting their second price increase of the year. Among these are plants at Nazareth, Pa.; Bath, Pa., and Northampton, Pa., where prices will go up another 15 cents a barrel. A 15-cent hike in the fourth quarter also has been scheduled by a Hudson, N. Y., mill that jumped its price 30 cents a barrel in the first quarter.

Here's where the fourth-quarter increases will come:

- Alpha Portland—15 cents a barrel at Martin's Creek, Pa., and Catskill, N. Y.
- American-Marietta—15 cents at Martinsburg, W. Va.
- Hercules—15 cents a barrel at all plants.
- Ideal—20 cents a barrel at New Orleans and 15 cents at Baton Rouge, La.
- Lehigh Portland—15 cents at Alsen, N. Y.; Union Bridge, Md.; Fordwick, Va.; Sandt's Eddy, Ormrod and Fogelsville, Pa.
- Lone Star—20 cents at New Orleans and Norfolk, Va., and 15 cents a barrel at Hudson, N. Y.; Lone Star, Va.; and Nazareth, Pa.
- Medusa—15 cents a barrel at York, Pa.
- North American—15 cents at Howes Cave and Catskill, N. Y., and at Security, Md.
- Penn-Dixie—15 cents at Penn-Allen, Nazareth and Bath, Pa.
- Universal-Atlas—15 cents at Hudson, N. Y., and Northampton, Pa.
- Dragon—15 cents at Thomaston, Me., and Northampton, Pa.

All of these increases will come in the mill prices. But there is no indication of the full effect on prices builders will pay for cement in various cities.

ENR's cost indexs for 20 key cities, for example, show no general pattern in annual increases. Between the third quarter of 1949 and the third quarter of 1950, for example, prices went up an average of only three cents a barrel. But, on the same basis, prices jumped 18 cents a barrel the following year as producers rushed to beat imposition of Korean War price controls.

The following year, price increases at the retail level averaged six cents. Then, from Sept. 1, 1952, to Sept. 1, 1953, prices climbed 11 cents a barrel. The next year, they moved up 13 cents and the following year a dime.

From the third quarter of 1955 to the present, cement prices in the 20 key cities have gone up 16 cents a barrel at the retail level—not counting the latest wave of price boosts which will show up in the fourth quarter report.

Bond Market Better

Municipals sell briskly; high yields are attractive lures

For the first time in months, the bond market has picked up strength. Attracted by high yields, investors finally turned to municipal bonds and dealers had no trouble selling last week's issues.

Among the offerings that found a ready market were:

- $29 million Los Angeles School District bonds, offered at yields of 2.00% to 3.10%.
- $9.5 million Kansas City, Mo., water revenue bonds, yielding from 2.50% to 3.00%.
- $4 million Pima County, Ariz., School District bonds, yielding from 2.40% to 3.40%.
- $2.9 million Springfield, Ill., electric revenue bonds, yielding 2.40%.
- $2.35 million Sonoma County, Calif., Flood Control District bonds, priced to yield from 2.50% to 3.35%.

Many others fared as well. To municipalities that have been unable to get bids for bonds to finance local public works projects, such as schools, sewerage systems, water supply facilities or roads, the improvement in the bond market could be significant.

However, municipal bond experts this week told ENR that interest rates will continue high. The only difference, they point out, is that some bond issuing agencies could not get realistic bids for their bonds in the past three months even with high interest rates.

Part of the upturn in the bond market may be traced to the pressures on the stock market. With some weakening in even "blue chip" stocks, some investors have pulled out of the stock market and purchased municipal bonds instead.

Another factor that strengthened the

(Continued on page 108)

PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES
Approved by the Institute of Makers of Explosives, September 30, 1955
READ DO'S & DON'TS CAREFULLY
WARNING:
DEFINITIONS

Send for your FREE COPY of

do's and don'ts with explosives!

Everyone who has anything to do with explosives should have a copy of this new, revised, up-to-date list of *instructions and warnings*, approved by the Institute of Explosives Makers.

It covers important functions in the handling and use of explosives—*lists 72 Do's and Don'ts* for prevention of accidents in handling, transporting, storing, loading, tamping, shooting and disposal.

Contains vital precautions when shooting either electrically or with cap and fuse . . . eleven suggestions for minimizing poison gas hazards . . . prevention of misfires . . . approved methods for priming. Send for your *free copy today!*

Explosives Division
ATLAS POWDER COMPANY
Wilmington 99, Delaware

Please send me a copy of the new "DO'S and DON'TS with Explosives."

Name_____

Company_____

Address_____

City_____ State_____

EXPLOSIVES DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities

municipal bond market in the past week to ten days was the drop in unsold bonds still in dealers' hands and a comparatively small quantity of new issues scheduled to come to market.

Some $70 million in new municipal bond issues were scheduled to be sold this week and the "visible supply," i.e., issues definitely on the calendar, is only $230 million for the next 30 days.

One unknown, according to bond experts, is the "invisible supply" of bonds. In the past three months, many bond issues have been postponed because of the weak market. If investors are willing to pay a better price for bonds, now, many of these municipalities will reschedule their issues.

Will interest rates weaken? Wall Street sources say "no." In fact, they feel that banks may raise the prime bank rate again—within a month, unless there is a noticeable change in the market.

They point out that the interest rate the Treasury had to pay about ten days ago on 91-day bills moved up to 2.098%—close to the Federal Reserve's 3% discount rate.

If the Treasury bill rate stays close to the discount rate for another two or three weeks, banks will boost the interest rate and the Federal Reserve will follow with another hike in the discount rate, financial experts say.

Worse Shortage

Construction faces more competition for steel

The shortage of steel for construction—particularly structurals and plates—probably will be worse next year than had been expected. The construction industry faces stiffer competition for available steel because of rising demands in other steel-consuming industries.

Demand in most of the industries that compete for steel is expected to rise. If the forecasts are correct, construction probably will be near the end of the line when supplies are handed out.

Prediction for an increase in steel demand comes from Howard V. Clark, executive vice president of Detroit Steel Corp.

Clark sees pressure for more steel building up in the following industries: autos, railroads, farm equipment, general machinery, containers, oil and gas and shipbuilding. The consumer appliance field also may see a slight increase in demand for steel, according to Clark.

Main trouble spots for construction will continue to be structurals and heavy plate. Clark cites the fact that several mills already have delivery schedules extended as long as 12 to 16 months.

Availability of structurals and plate will be limited by the amount of plain material produced. While some experts see the steel industry operating next year at from 85% to 96% of rated capacity, Clark expects an average operating rate of 90%. At that rate, the industry would produce about 120,000,000 ingot tons.

Some contractors are convinced that 1957 would be a headache even if the steel situation remained as it is now. An ENR survey shows that contractors are feeling the structural steel shortage in all 20 key cities.

Deliveries are slow, sometimes running up to a year or more for structurals.

Suppliers are on allocation from the mills. Some construction projects are being held up; in others, designs are being changed to use substitute materials.

Boston steel suppliers are attempting to fill old orders, but they will not take orders from new customers.

One of the principal New York suppliers wiped all old orders off the books, and started in fresh, booking only new orders that have a reasonable chance of being filled in the next few months.

Minneapolis contractors can get delivery on small orders of structural steel in six months. But, larger orders are quoted at 16 months delivery time.

While the shortage of structurals is the most prolonged and the most severe, other types of steel used in construction also are short.

Deliveries are slow or shortages are reported in 17 of the 20 key construction centers for reinforcing bars—only Cleveland, Dallas and Kansas City are in good shape. Expanded metal lath is short in Baltimore, Cincinnati, New Orleans and St. Louis. And, of the 20 key cities surveyed by ENR, only one—Philadelphia—reports an adequate supply of steel sheet piling.

Equipment Sales May Climb 20% to 25% Higher Next Year

Construction machinery and equipment sales next year may run 20% to 25% above this year for the industry as a whole, according to estimates by Irwin White, sales manager of the Gradall Division of Warner & Swazey.

The expanded highway program alone is expected to account for a 15% increase in 1957 over this year's record volume, White said.

Are roadbuilders ordering more new machines than they actually need for present work to overcome slow deliveries or beat possible price increases? White doesn't think so.

But, contractors may be replacing used equipment faster than they have in the past because of tax advantages.

Faster depreciation, permitted in 1954 tax law changes, encourages contractors to replace equipment more often than in the past. These changes enable firms to write off new equipment costs for tax purposes over a shorter period, and recover their machinery and equipment investment faster.

Building Materials Center Planned in New Orleans

A million-dollar building materials center is being planned in New Orleans by a group of businessmen in the city. Construction may start before the end of the year.

The facility is being designed as a one-stop "supermarket" for builders and prospective home owners.

The three-story structure will contain 45,000 sq ft of floor space with exhibit room for several hundred building materials. In addition to viewing the building materials available, visitors will be able to obtain information on home sites, residential financing, design and interior decoration.

The building will feature exterior concrete stairs and cantilevered galleries to permit the public to view lighted displays at any hour of the day or night.

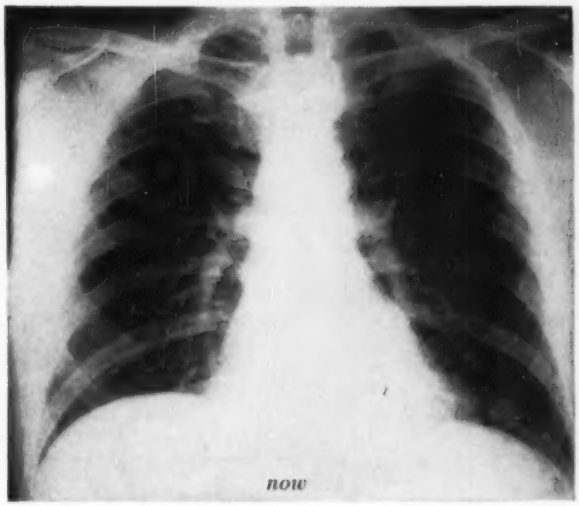
A branch bank and two stores will be located on the first floor. The second floor, in addition to display areas, will house an auditorium, conference room and library. A portion of the third floor will have offices for realty firms, architects and manufacturers' agents.

The project is being designed by the architectural firm of Grimball-Van Amerongen.

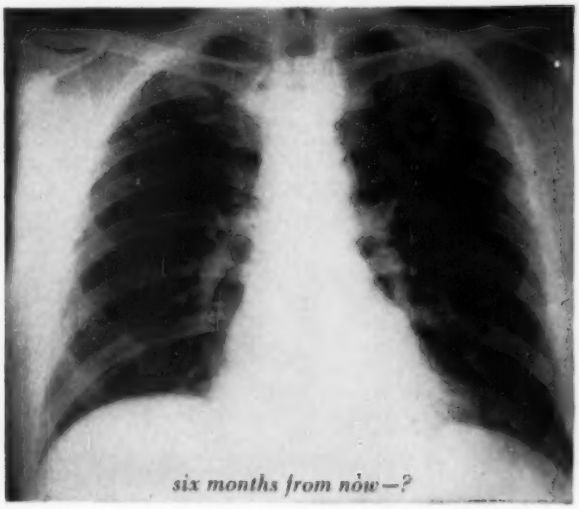
Business Briefs . . .

• **Canadian cement**—Production is due to start in the next few days at the $8-million plant of the Saskatchewan Cement Corp., first cement producer in that Canadian province. The plant will have an annual capacity of 850,000 barrels.

• **Acquire steel firm**—Materials manufacturer H. K. Porter Co., Inc., is acquiring another steel company Oct. 1. Newest addition to the Porter fold: West Virginia Steel and Manufacturing Co. which produces light steel rails, reinforcing bars, mine roof bolts, hot rolled bars and semi-finished steel.



now



six months from now—?

TWICE A YEAR

MEN OVER 45!...Lung cancer, in men of your age, has increased so alarmingly in recent years that our doctors strongly recommend that you make a habit of having *two* chest x-rays every year: one, when you get your annual medical checkup; the other six months later.

Today, you are six times more likely to develop lung cancer than a man of your age twenty years ago. Our doctors still don't know *why* you are, but they *do* know that their chances of saving your life could be as much as ten times greater if they could only detect lung cancer "before it talks"...before you notice any symptoms whatsoever in yourself.

That's why we urge you and every man over forty-five to make semiannual chest x-rays a habit —for *life*.

To see our lifesaving film, "The Warning Shadow," call the American Cancer Society office nearest you or simply write to "Cancer" in care of your local Post Office.

American Cancer Society

A Look at Longer Contracts

Management group sees the long-term contract as a tool for labor peace but notes the need for caution in its use

The long-term labor contract is in itself no guarantee of labor peace. Such a contract may be costly, it may be illusory—it all depends upon how well it's negotiated and administered. But the trend toward its use is now behind us. Long-term labor contracts for two or more years are part of our economy and are most useful in those industries with long-term production schedules.

These are some of the thoughts expressed last week at the Fall Personnel Conference of the American Management Association, Inc., in New York. The discussion was led by E. F. Ohrman and John L. Waddleton, chief negotiators for Allis-Chalmers Manufacturing Co.

• **Pitfalls**—Perhaps the biggest pitfalls in long-term contracts, according to AMA spokesmen, are the sacrifices management is sometimes willing to make to obtain them, and the use of reopening clauses.

At the outset of the discussion, a long-term contract was rigidly defined as one for "two or more years with all terms and conditions fixed for its full term, with no reopenings of any kind, and with a comprehensive and unequivocal no-strike clause." Anything short of the absolute, it was noted, may make the contract "long term in name only and not in fact."

Cautioning employers to go slow on the cost of such contracts, Ohrman stressed the fact that the right to manage belongs to management under the common law. "When management, perhaps in the hope that a long-term contract will guarantee labor peace," he said, "buys it at the cost of surrendering its control of the business operation, it has gained nothing and has possibly lost everything."

The cost problem, according to Ohrman, is two-fold. In terms of dollars and cents are the various items usually included in union demands: annual wage increases, pensions, group insurance, health and accident insurance, some form of compulsory unionism, supplementary unemployment benefits, and allowances for cost-of-living adjustments. In terms of business control are restrictions on the right to subcontract; power in an arbitrator to modify disciplinary action; selection of length of service as the controlling factor in work force allocation (job assignments, transfers, promotions, shift assignments, layoffs) all of which, according to Ohrman, are part of management's prerogatives that shouldn't be invaded.

In the final analysis, he said, labor peace can be achieved only when "there exists, on both sides of the table, a complete recognition of and a complete respect for the other fellow's area of responsibility"—the employer's right to manage, the employee's interest in job security, the union's concern with its own security.

• **Reopeners**—But even a well negotiated contract may fail to achieve labor peace and production stability. "An inherent hazard of a long-term agreement," said Ohrman, "is the possibility of changes in the union personnel responsibile for the administration of the agreement." If the control shifts to those who disagree with the original negotiators, "peace" may be rather fleeting.

A more serious danger, however, appears to lie in the use of reopening clauses. In such cases, the employer finds himself not only faced with the necessity of renegotiating the issue or issues specified, but, under prevailing National Labor Relations Board rulings, he may have to renegotiate the entire contract.

This, according to Waddleton, stems from the fact that the NLRB construes the law to allow a challenging union, under certain types of reopeners, to hold a representation election. If successful, the new union can demand renegotiation of the entire contract.

Other situations that may jeopardize the long-term aspect of a contract are union mergers and a switch of union affiliation by employees. Does the successor union inherit the contract, or can it demand a new one? The law still is not jelled.

• **Dilemma**—Some attention was given to one of the obvious dilemmas inherent in long-term agreements—the longer the term the greater the possibility of changing needs or conditions warranting a modification of the contract.

Here, Ohrman was inclined to consider opposition to Walter Reuther's "living doctrine" theory a "tempest in a teapot." A clause, he said, that allows modification or change by mutual consent does preclude the legal right to press unilaterally for a change, but at the same time allows a contract to be modified if it later appears to be in the best interests of all to do so. At the same time, he noted, it has the psychological advantage of expressing a willingness to discuss issues that may later arise.

A contrasting approach, noted by Waddleton, is use of a waiver clause by which the parties agree not to attempt to negotiate on any subject whether it's covered in the contract or not. Unless the comprehensiveness of the contract is clear, the clause might prove a dangerous shackle.

Taken as a whole, the long-term contract was considered a definite tool to labor peace—but one that may boomerang unless carefully drawn and thoughtfully negotiated.

Work Assignments

Taft-Hartley employed to stop jurisdictional dispute

An example of how the Taft-Hartley Act is used against the building trades in their jurisdictional conflict with industrial unions turned up last week, when the National Labor Relations Board handed down a decision against a local of the plumbers union that had protested assignment of construction work to industrial employees.

The dispute arose during construction of a water purification plant for the St. Louis Water Co. The plant itself was being constructed under contract and the plumbers were on the job as employees of a subcontractor. Trouble arose when the company proposed to use its own employees—members of the utility workers union formerly in the CIO—to install water mains from the river to the plant. In protest of this assignment, the plumbers struck, claiming that installation of the mains was historically within their jurisdiction.

The plumbers were brought before the NLRB on an unfair labor practice charge under Sec. 8(b)(4)(d) of the Taft-Hartley Act—engaging in a strike to force an employer to assign work to them instead of to members of another union.

Without deciding whether the plumbers' claim had any merit, the board upheld the charge because the union was using strike pressure for a reason prohibited by law.

Under the law, the cards were stacked against the plumbers in two respects:

(*Continued on page 112*)

Averaged 16⅔ cubic yards an hour, for 8 hours, with 24 location changes!

ONE SHERMAN POWER DIGGER averaged 16⅔ cubic yards of excavation an hour, for 8 hours, for a southwestern plumbing contractor. And this figure included time necessary for 24 location changes! The Sherman is used, primarily, for digging water, gas and electrical service lines for new homes.

Here are some reasons why this plumbing contractor gets more production from his Sherman: Fast operating cycle; high visibility around other utility lines; and top-notch bell-hole performance. And the local Ford Tractor dealer, having sold so many, is equipped and skilled to keep his machine on the job, working at peak output without costly downtime.

See your local Ford Tractor dealer TODAY for a demonstration or write for Bulletin No. 1445

Sherman
PRODUCTS, INC.
ROYAL OAK, MICHIGAN
POWER DIGGERS* • FRONT END LOADERS • FORK LIFTS

*Designed, Engineered and Manufactured jointly by Sherman Products, Inc., Royal Oak, Michigan, Wain-Roy Corporation, Hubbardston, Mass.

Just the ticket for quick, easy brush-cutting

Light-weight, powerful, versatile... that's the McCulloch brushcutter. In just a few minutes, this work-saving tool can be changed over to a chain saw and back again. Or, bought as an attachment, it can be used on the McCulloch 33 and Super 33 chain saws.

CHECK THESE IMPORTANT FEATURES:

- Cuts with ease through light brush or saplings up to 6 inches.
- Weighs less than 28 pounds with engine and shoulder harness.
- Exclusive bucking spike provides added safety and better leverage in cutting large saplings.
- Blade angle allows flush cutting with ground.
- Comfortable handlebars provide complete control of brushcutter at all times, better maneuverability in close quarters.
- Hollow steel drive shaft plus famous McCulloch engine assure longer life and dependability of brushcutter.

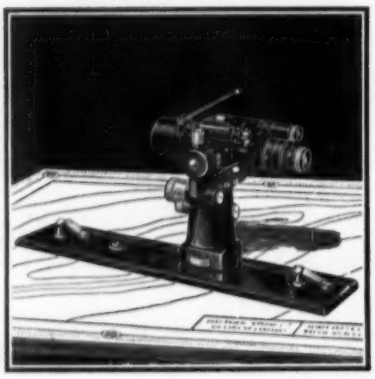
See your nearest McCulloch dealer for a demonstration.

McCULLOCH

World's largest chain saw builder

McCulloch Motors Corporation
Los Angeles 45, California

5-6107



WATTS MICROPTIC ALIDADES FINEST IN THE FIELD

For swift accurate field mapping and surveying, leading surveyors rely on the Watts Microptic Alidade. The Watts Alidade is highly accurate, compact, light weight, versatile and dependable. See the advanced-design Watts Microptic Alidade with exclusive pillar levelling at your nearby Dietzgen Dealer. Made by Hilger & Watts, Ltd., London; sold and serviced in the United States by the Eugene Dietzgen Co.

EUGENE DIETZGEN CO.

Chicago • New York • San Francisco • New Orleans • Los Angeles • Pittsburgh • Washington Philadelphia • Milwaukee • Seattle • Denver Kansas City • *Dealers in All Principal Cities*

DIETZGEN

from
●
●
OFFICE MANAGER
●
to
●
GENERAL MANAGER
●
●

yes, that is the quality of the personnel available to your organization through the Classified Advertising pages of ENGINEERING NEWS-RECORD.

Classified Advertising Division
ENGINEERING NEWS-RECORD
330 W. 42nd St. New York 36, N. Y.

GUNITE dense—durable—high strength

PNEUMATICALLY PLACED CONCRETE

for — Swimming Pools
Fireproofing Structural Steel
Lining Steel Stacks & Bunkers
Repairing Docks, Dams & Bridges
Reservoirs Insulating Concretes
Water Main Lining Thin Walls
Sewer Repairs Lining Rock Tunnels
Pile Protection Prestressed Tanks
Stucco Coatings Pressure Grouting

We are contractors of wide experience with the know-how that counts. *Get in touch with us for engineering data and estimates.*

GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N. Y.
MURRAY HILL 3-7699

• The utility workers already had obtained in their labor contract with the water company a clause requiring the company not to engage in construction by contract if the work were such that company employees could do it.

• The company, in assigning the work to its employees, was not violating any NLRB order or certification determining who the bargaining agent is for the employees to whom the work is assigned.

Secondary Boycotts

Picketing at common sites still plagues labor board as law moves into politics

Two aspects of secondary boycotts—picketing at common work sites and use of roving pickets—continue to plague the National Labor Relations Board. And some new cases show there's still about as much disagreement over what the law is as there is over the political question of whether Congress should liberalize or change the secondary boycott provisions of the Taft-Hartley Act.

Last month the NLRB had before it the same problem that confronted the U.S. Supreme Court in the Denver Building and Construction Trades Council case back in 1951: When does picketing at a site where more than one employer is working cease to be lawfully primary and become illegally secondary? The board's answer is that picketing at a common site is unlawful if the principal object is to put pressure on neutral employers.

Another angle of the same problem was before the board last week: If the primary employer has a nearby place of business, can he lawfully be picketed elsewhere, such as at common construction site when he makes deliveries? In reply to that question the NLRB's answer is still "no," although it seems less sure about it now than it did before.

• Law—When the secondary boycott provisions were put into the law, the purpose was to protect innocent third parties from being injured in labor disputes in which they are not involved. In a typical case, workers who have a dispute with their employer (primary) put pressure on a neutral employer (secondary) to induce him to cease doing business with the primary employer until the workers win their point. The law doesn't speak in terms of "secondary boycotts" or "primary" and "secondary" employers but merely prohibits labor groups from striking or

engaging in work stoppages designed to force an employer to stop dealing with other persons in order to achieve certain goals.

Common site and roving picketing situations raise this difficult question: Is the secondary employer rather than the primary one the real target of the picketing? An affirmative answer makes the law apply.

Answers to the question have produced two general rules used by the NLRB as guides:

• Picketing at a common construction site is not a violation of the law if the primary employer's workers are at the site doing their normal work, if the picketing is confined to the area where they are working, and if picketing signs make it clear the dispute is with the primary employer only.

• Picketing of an employer, such as a supplier of gravel or concrete, as he moves about from job to job, is in itself unlawful if the employer has his own place of business where the picketing could be confined and still be effective. Originally adopted by the NLRB, the rule has been criticized as too rigid and unreasonable. The board is still sticking to its guns but recently has been finding other pegs on which to hang the same results.

• **Examples**—Last week, for instance, the NLRB refused to abandon its rigid roving picketing rule used in the Campbell Coal Co. case, but dug up some additional grounds for holding the picketing illegal: Neutral employers had been asked to stop doing business with the struck employer and neutral employees hadn't been told the strike was against the primary employer only. And last month the board, in ruling against picketing of ready-mixed concrete delivery trucks at construction sites of AGC members in Omaha, Neb., used the alternative approach: illegal in itself, or illegal because the object was to induce AGC members to boycott the struck concrete supplier.

In using the second alternative, the board is coming back to the theory used in the Denver Building Trades case: Striking or picketing is illegal if one of its objects is to force one employer to stop doing business with another.

A similar reaction on the part of the board was evident last week when it held illegal, in a split decision, picketing at entrances to a retail food market occupied by the primary and neutral employers but owned by the primary employer. The majority thought "involvement of neutrals" was the principal object but two dissenters couldn't see a truly secondary situation.

• **Legislation**—This is one of the long-recognized headaches in picketing at common construction sites and in use of roving pickets.

In the Denver Building Trades case, where the trouble and the picketing stemmed from employment of a non-union electrical subcontractor on a union construction job, Justices Douglas and Reed, who dissented, thought the legal right to strike shouldn't be whittled away at common construction sites by unrealistic use of the secondary boycott provisions.

Since then, President Eisenhower has pointed out that those working together on a construction project usually have such closely interwoven interests that none can be considered really neutral in any labor dispute. He has recommended the law be changed so that the secondary boycott provisions will no longer protect secondary employers on construction sites.

The building trades have repeatedly asked Congress for such an amendment. The Republicans are pledged to push President Eisenhower's recommendation. And the Democrats, in their pledge to rewrite the Taft-Hartley Act, are presumably committed to the same course, although Stevenson so far has been less specifically articulate.

Training Program in Greece Undertaken by Labor Group

The technical assistance program of the United Nations is being extended by the International Labour Organization to the construction industry in Greece.

An ILO team of vocational training experts has been sent to Greece charged with the task of demonstrating modern methods of instruction in the building trades. The government schools in which the program is being launched are schools for youngsters who were orphaned or whose parents were disabled in World War II or the Greek Civil War or by earthquakes. After receiving accelerated training in a trade between the ages of 16 and 20, the youths return to their villages as craftsmen.

The ILO team now is estabishing two pilot classes in a school near Athens. One is in masonry, the other in carpentry. ILO supplies both the equipment and the tools.

Three Frenchmen make up the ILO team: Francis Larbec, engineer at the National Normal School of Apprenticeship at Lyons; Louis Rouier, instructor in masonry and reinforced concrete at the Ville Urbanne Apprenticeship Center; and Albert Avel, cabinet-making instructor at the College d'Oullins.

OFFICIAL PROPOSALS

(Continued on pages 114-115)

Bids: October 23, 1956

The Port of New York Authority

NEW YORK INTERNATIONAL AIRPORT
FLOODLIGHT TOWERS
CONTRACT NYA-650.037

Sealed proposals for the furnishing, delivery and storage of floodlight towers for New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, October 23, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, September 27, 1956

COMMONWEALTH OF MASSACHUSETTS. Department of Public Works. NOTICE TO CONTRACTORS: Sealed proposals for furnishing, erecting, and painting structural steel for bridge on Route 28 Relocation over the Merrimac River in the Towns of ANDOVER and METHUEN (Contract No. 2) I-35(2) will be received at Room 427, 100 Nashua Street, Boston, Mass., until 2:00 P.M. (DST) of TUESDAY, OCTOBER 16, 1956 and at that place and time publicly opened and read. Proposal guaranty: $33,000. Charge for plans and proposal forms: $10.; amount returnable only to bidders. Complete information at said office, plans on display at District office in Danvers. Minimum wage rates for this project have been pre-determined by law and are set forth in the bid proposal. Minimum dump truck rates have been established. An award will not be made to a Contractor who is not equipped to undertake and complete the work. Right reserved to waive any informality in or reject any or all proposals. By: JOHN A. VOLPE, Commissioner of Public Works. September 15, 1956.

U. S. Government

Department of Commerce, Bureau of Public Roads, September 13, 1956. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., OCTOBER 12, 1956, for 2.370 miles grading, draining, bridge abutments, and other work from Spout Run to Chain Bridge. Project 1AI, George Washington Memorial Parkway, Arlington County, Virginia. The approximate quantities of the more important items are 65 acres Clearing and Grubbing, 628,950 cu. yd. Excavation, 4,950 cu. yd. Concrete, 660,000 lb. Reinforcing Steel, and 6,725 lin. ft. Concrete Culvert Pipe. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above. H. J. Spelman, Division Engineer.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: October 16, 1956

New York State Bridge Authority

Sealed proposals will be received by the New York State Bridge Authority at its office at 22 Ferry Street, Kingston, New York until 2:00 o'clock P.M., Eastern Daylight Time, October 16, 1956, at which time and place they will be publicly opened and read, for the furnishing of labor and materials necessary in making an addition to the Traffic Way at the easterly approach to the Mid-Hudson Bridge spanning the Hudson River at Poughkeepsie, New York.

Plans, specifications, proposal blanks, form of contract, bond and information for bidders may be seen at the office of the New York State Bridge Authority, 22 Ferry Street, Kingston, New York and copies of the same may be obtained therefrom upon a deposit of Thirty Dollars ($30.00) which sum will be refunded if the plans and specifications are returned by bidders in good condition within twenty days (20) of bids having been received and acted upon by the New York State Bridge Authority, and Twenty-five Dollars ($25.00) of the deposit will be so returned to non-bidders.

A certified check on a National Bank, State Bank or Trust Company in the sum of ten per cent (10%) of the amount of the bid, made payable to the New York State Bridge Authority must accompany the bid, as a guarantee that the contract will be entered into, if awarded.

A faithful performance bond in the sum of one hundred per cent (100%) of the contract price will be required.

A labor and material bond will also be required.

The New York State Bridge Authority reserves the right to reject any or all bids.

The Authority's preliminary estimate of cost is $180,737.50.

ROBERT HOE
Chairman

Bids: October 16, 1956

City of Richmond, Virginia

NOTICE TO BIDDERS

Sealed Proposals will be received at the office of the Director, Purchases and General Services, 4th floor, Mosque Building, Laurel and Main Streets, Richmond, Virginia, until but not later than 11 o'clock A.M. E.S.T., October 16, 1956, at which time they will be publicly opened and read aloud, for the following work which may be awarded in whole or in part:

Location: The pumping station is to be located at a site northwest and adjacent to the Sewage Treatment Plant, situated near the southwest bank of the James River at Rockett's Wharf, northeast of the United States Naval Diesel School, in the City of Richmond, Virginia.

Type of Work: Division II—Main Pumping Station—General, includes the construction of the pumping station, junction chamber, regulator chamber, incoming sewers and outside piping, and all appurtenat work, except that included under Division III.
Division III—Main Pumping Station—Pumping Equipment, includes the furnishing, testing and delivering of the sewage pumps together with motors, engines, drives and appurtenances.

The proposal and other contract documents may be examined at the office of the Director of Public Works, 217 Governor Street, Richmond, Virginia, and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of the contract documents may be obtained from the office of the Director of Public Works upon the deposit of Twenty-Five Dollars for each set. Any general contractor who submits a bona fide bid on the project will be refunded his payment in full for not more than three sets, and will be refunded fifteen dollars per set for each additional set. All others will be refunded fifteen dollars per set upon the return of the documents in good condition within ten days after the opening of the bids.

J. W. Huffman
Director of Purchases and
General Services

Bids: October 11, 1956

This Is A Re-advertisement With A Change In Specifications

DELAWARE RIVER PORT AUTHORITY
of the
COMMONWEALTH OF PENNSYLVANIA
and the
STATE OF NEW JERSEY
Administration Building
Camden, New Jersey
WALT WHITMAN BRIDGE CONTRACT
NO. P-13

Sealed bids will be received for "Installation of New Stacks on the Power Plant of Publicker Industries, Inc., Delaware and Packer Avenues, Philadelphia, Pa.", known as Contract No. P-13, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey, until 2:30 P. M., Eastern Daylight Time, Thursday, October 11, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon the deposit of $10.00 check, which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $20,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO,
Executive Director

9/19/56
McS

Bids: October 9, 1956

Sewage Treatment Plant

SEWAGE TREATMENT PLANT, SEWERS
AND
WATER DISTRIBUTION SYSTEM
EXTENSION
VILLAGE OF VERNON,
ONEIDA COUNTY, N. Y.

Sealed proposals for furnishing all labor, equipment and material for the construction and installation of Sewage Treatment Plant, Sewers and Water Distribution System Extension and appurtenances for the Village of Vernon, N. Y., will be received by the Village Board of the Village of Vernon at the Fire Station, Vernon, N. Y., until 2:00 P.M. Eastern Daylight Time on Tuesday, October 9, 1956, at which time they will be publicly opened and read aloud.

The work will be divided into the following contracts:

1. Sewage Treatment Plant.
2. All sewers exclusive of those in the Black Addition.
3. Water distribution system extension and sewers in the Black Addition.

These contracts may be awarded separately or in any combination that the Village Board may deem to be in the best interests of the Village.

The Information for Bidders, Form of Bid, Form of Contract, Performance Bond, Plans and Specifications may be examined at the office of the Village Clerk, Vernon, New York, and copies thereof may be obtained from William T. Field, Consulting Engineer, Watertown, N. Y., upon a deposit of Fifteen ($15.00) Dollars for each set, which sum will be returned to all bidders upon their return in good condition, within thirty (30) days after the opening of the bids.

The Village Board reserves the right to waive any information in or to reject any or all bids or to accept any bids that they deem is in the best interests of the Village.

Each bidder must deposit with bid, security in the amount of not less than five (5%) percentum of the bid in the form and subject to the conditions provided for in the Information for Bidders.

The successful bidders will be required to furnish a performance bond in such form and having as surety thereas such surety company or companies as are approved by the Village Board, in an amount of not less than 100% of the total amount of the accepted bid.

Dated: September 5, 1956

VILLAGE OF VERNON, N. Y.
JOHN W. BLACK, JR.
MAYOR

WILLIAM T. FIELD
Consulting Engineer
Watertown, N. Y.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4768) will be received at Ogden, Utah, until October 23, 1956, for furnishing labor and materials for Wanship and Gateway Power Plants and Switchyards, Weber Basin Project, Utah. Location near Wanship, Utah in Summit County; and near Ogden, Utah in Morgan County. Principal items are 36,000 cu. yds. excavation; 1,635 cu. yds. concrete; furnishing and installing penstocks; and other work. Completion time 520 days. For particulars, address Bureau of Reclamation, P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: October 22, 1956

Construction of Sewerage System

Sealed proposals will be received by the undersigned at BOROUGH COUNCIL CHAMBERS, SLATINGTON HOSE COMPANY NO. 1, 401 WEST CHURCH STREET, SLATINGTON, LEHIGH COUNTY, PENNSYLVANIA until 6:30 P.M. Eastern Standard Time, October 22, 1956, at which place and time, or shortly thereafter they will be publicly opened and read, and shall cover furnishing all necessary labor, materials and equipment, and performing all work for the Contracts noted below. Separate proposals will be received upon five (5) parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check or bid bond in an amount not less than ten percent of the bid total, all in accordance with the provisions contained in the Contract Documents.

Copies of the Contract Documents, including Drawings and Specifications, may be obtained only from the office of LEONARD M. FRAIVILLIG COMPANY, ENGINEERS, BETHLEHEM TRUST BUILDING, CORNER OF BROAD AND MAIN STREETS, BETHLEHEM, PENNSYLVANIA, at which place copies will also be on hand for inspection by prospective bidders, and material and equipment suppliers. Not more than two (2) sets of a particular Contract will be allowed to any prospective bidder.

Checks for all deposits shall be drawn payable to LEONARD M. FRAIVILLIG COMPANY and sent to their address as indicated above. Deposit for each set requested shall be as follows:

Contract One—CONSTRUCTION OF A SEWERAGE SYSTEM	$50.00
Contract Two—GENERAL CONSTRUCTION OF A SEWAGE TREATMENT PLANT, PUMPING STATION, FORCE MAIN, AND OUTFALL SEWER	$30.00
Contract Three—PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT AND PUMPING STATION	$20.00
Contract Four—HEATING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT AND PUMPING STATION	$20.00
Contract Five—ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT AND PUMPING STATION	$20.00

Full refund will be made only to actual bidders on the five (5) Contracts noted above, for return of one (1) set, no more, of a particular Contract in good condition within fifteen (15) calendar days after closing date for receipt of bids; refund for return of all other sets in good condition within the same period, will be fifty (50) percent of deposit. No refund of deposit will be made for Contract Documents returned later than fifteen (15) calendar days after date of receipt of bids.

Copies of the Contract Documents, including Drawings and Specifications will be on file, for inspection purposes only, at Citizens National Bank, 506 Main Street, Slatington, Pennsylvania, and at the office of Gannett Fleming Corddry and Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pennsylvania; but none can be obtained from these last two above mentioned places.

Slatington Borough Authority
Slatington
Lehigh County
Pennsylvania

Leonard M. Fraivillig Company
Engineers
Bethlehem, Pennsylvania

U. S. Government

General Services Administration, Public Buildings Service: Sealed Bids for Cleaning and Painting, etc. of 8" steel pipe at the National Guard Armory, Morris Township, N. J., will be received in triplicate until 2:00 P.M., EDST, October 2, 1956 and then publicly opened in the Bid Room of the Business Service Center, 250 Hudson Street, New York 13, New York. Specifications, etc., may be obtained from the Business Service Center; from the Custodian of the Building.

OFFICIAL PROPOSALS

Bids: November 1, 1956

New York State Thruway Authority

NOTICE TO BIDDERS

The New York State Thruway Authority invites proposals and quotations for the furnishing and installation of AUTOMATIC TOLL COLLECTION EQUIPMENT for barrier toll stations on the New York State Thruway. Full information on the Automatic Toll Collection System is available and may be obtained from the office of the Director of Purchasing, New York State Thruway Authority, Delaware Avenue Plaza, Elsmere, New York (Mailing Address: P. O. Box 189, Albany, New York).

Each proposal should be enclosed in a sealed envelope and the words "Automatic Toll Collection Equipment" should be shown, for identification, on the face of the envelope, and sealed envelope should be directed to the Authority at the above mailing address. Sealed proposals will be received until 11:00 A. M., E. S. T. on November 1, 1956 when they will be publicly opened and read. The Authority reserves the right to reject any or all proposals.

HOLDEN A. EVANS, JR.
General Manager

OFFICIAL PROPOSALS

Bids: Prequalification Date: October 11 1956

Board of Education—Bureau of Construction, Notice Re: Prequalification Forms for Contractors

NOTICE IS HEREBY GIVEN THAT THE Director, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York, will receive applications for prequalification of bidders, from contractors who may wish to submit bids for the proposed hereinafter specified contracts, as follows:

For General Construction, Plumbing and Drainage, Heating & Ventilating, Electrical Work and Lighting Fixtures—Public School 192, Addition & Modernization, 136th St., East of Broadway, Manhattan.

Prequalification application forms will have to be secured and must be submitted to the Director, Bureau of Construction Office, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised will be received from prequalified bidders only.

The time for submitting prequalification application forms for the above contracts will expire on Thursday, October 11, 1956.

WILLIAM H. CORREALE
Director
Dated: September 18, 1956

EMPLOYMENT OPPORTUNITIES

(Continued on pages 116-119)

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
New York: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Engineers and Draftsmen. Structural and mechanical for building construction work in consulting engineers office in Hartford, Conn. area. Address reply to P-2873, Engineering News-Record.

General Superintendent, qualified engineer for Kansas contractor, must have proven experience on industrial buildings & gov't. projects. Salary open. P-2754, Engineering News-Record.

Large Midwest Consulting firm has opening for experienced sewage and industrial waste treatment designer. Excellent opportunity for man of proven ability with large well established organization. Inexperienced designer need not apply. State full experience record and salary range in first reply. Travel and subsistence for interview will be considered. P-2843, Engineering News-Record.

Wanted: Executive Engineer for Florida construction firm, capable of estimating and managing all phases of road, bridge, and underground construction. Satisfactory salary with bonus. Must have executive management experience as well as field management. P-2864, Engineering News-Record.

General Supt. Engr. for Sewers and water lines must be well experienced in supervisory installation and estimating, coordinating inside and outside. Old established Company. Resume held in confidence. Columbia Constr. Co. Inc., 2108 Columbia Ave., Indianapolis 2, Ind., WAlnut 3-1567, Mr. Farrer.

Architectural Specification Writer to prepare contract specifications. Gamble, Pownall & Gilroy, Box 2465, Ft. Lauderdale, Fla.

Civil Engineers — Immediate vacancies for beginners and experienced Civil Engineers. Work related to flood control projects and hydrologic studies. Openings in Chicago and Springfield Illinois. Salary range $400-$600. Reply stating experience, location preferred and salary desired. Box P-2948 Engineering News-Record.

Heavy Equipment Engineer with at least 2 to 3 years of Mechanical Engineering Schooling for work in the South. Full information and references in first letter requested. Reply P-2917, Engineering News-Record.

Materials Engineer for work in Midwest. Must know concrete paving, some soils, some asphalt paving. Degree required. Registration desired. $9-10,000. Reply Box P-2888, Engineering News-Record.

WANTED
WALKER & SHIFTERS
ON SOFT GROUND TUNNEL WORK
Location—Midwest

P-3065, Engineering News-Record, Classified Adv. Div., P. O. Box 12, New York 36, N. Y.

POSITIONS VACANT

Engineers experienced in design and supervision of construction to work as resident engineers or prepare plans for water and sewer systems; also, architects for preparation of plans for general building work. State experience, age, salary required, when can report, and give references. Reply P-2827, Engineering News-Record.

Designers—Steel, Concrete, Electrical Piping, Air-Cond., Power Plants & Industrial Bldgs. Marbarry Corp., 120 Greenwich St., N.Y.C. Rector 2-3749.

Draftsman—Civil Engineering Projects. Permanent. Benefits. Salary open. Send resume of education and experience to P-2960, Engineering News-Record.

Wanted: Registered Professional Engineer specializing in Soil Mechanics, capable of taking complete charge of Soil Mechanics office performing soil exploration, laboratory testing, and writing engineering reports with respect to foundation requirements. Experience necessary. Some experience in structural design of foundations preferable but not essential. Good salary commensurate with qualifications. State qualifications in full, experience resume, references and salary requirements. P-2945, Engineering News-Record.

Civil Engineers, Designers, Draftsmen experienced in the design of sewers, pumping stations, sewage treatment plants, water supply systems, structural and hydraulic design, hydraulic computations, specs. O'Brien & Gere 400 E. Genesee St., Syracuse, N. Y.

Position as structural engineer, age 30-40, offered by Portland Cement Association, 33 W. Grand Ave., Chicago. Opportunities for engineer interested in theory and design of advanced uses of reinforced concrete.

Land Surveyor:—for old established Chicago firm. Permanent position. Salary $6000-$8000 per year. Give experience in first letter. P-2916, Engineering News-Record.

(Continued on following page)

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $28.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12 N. Y. 36, N. Y. October 11th issue closes September 28th

STRUCTURAL & CIVIL ENGINEERS

to work in our Boston Office

METCALF & EDDY

1300 Statler Bldg., Boston

Address inquiries to Mr. Murdough

POSITIONS VACANT

(Continued from preceding page)

Wanted: Senior Structural Designing Engineer. Permanent position with industrial company in upper New York State. Excellent salary and opportunity based on ability. Fine living conditions for family. P-3006, Engineering News-Record.

Architectural draftsman for office with school and church jobs to plan. Experience preferred in preliminary layout, presentation drawings and construction drawings. Permanent position for qualified man. Write P. O. Box 36 Lancaster, Ohio, giving qualifications, experience and salary, or call Lancaster 2243-W for appointment.

Soils Engineer—Civil or mechanical engineering graduate preferred. Training in soil mechanics desirable. Excellent opportunity with internationally known construction firm. Submit complete resume including salary desired. P-3040, Engineering News-Record.

Highways Engineers, Designers, Draftsmen for office work in the vicinity of Louisville, Ky., on highways, expressways and similar civil works. Permanent positions for qualified experienced engineers or recent graduates—with a growing firm of established consulting engineers — Opportunity for advancement based on merit—Liberal transportation and moving allowances. Suburban living available close to office. Liberal Employee Benefits—Immediate openings—Beginning Salary Commensurate with Qualifications. Please write fully to Box P-3056, Engineering News-Record.

Engineer-Estimator for General Contractor— able to estimate heavy construction, keep progress and cost records. Project in the Pittsburgh area. Good bonus arrangement for the right man. P-3048, Engineering News-Record.

POSITIONS WANTED

Construction or project manager, 48, engineering background. 30 years experience all phases heavy construction roads, bridges, hydroelectric projects, steel and concrete structures. Proven administrator and producer. Desires short term assignment. Excellent pinch hitting during sick leave, vacations or where job needs a boost. Would consider permanent connection. Available October 15. Domestic or foreign. PW-3002, Engineering News-Record.

Structural Engr., 65, life-time experience in struct. steel and reinf. concr. industrial design, etc., wants position in town or small city. Hyde, 5581 Bluehill, Detroit, 24, Michigan.

HYDRAULIC DESIGN ENGINEER

With 5 to 10 years' experience in Water Supply and Sewage Works, including design of treatment units, hydraulics, hydrology, structures, piping and the equipment involved in such work. We can offer the man meeting these qualifications an adequate salary and promising future with a prominent New York firm.

P-2908, Engineering News-Record
Class. Adv. Div. P.O. Box 12, N.Y. 36, N.Y.

POSITIONS WANTED

C.E. and M.E. in power plant engineering including 28 years of diversified experience in heavy and light construction, wishes new connection as a construction manager, general superintendent, project manager, or engineer, foreign work preferred with mild climate. Experience in airfields, water distribution, disposal plants, roads, railroads etc. Now employed in Spain. Available 60 days. PW-3000, Engineering News-Record.

Mining Engineer — Production — Exploration — Sales Promotion. Background includes management of surface and dredging operations; geologic exploration and evaluation of non-ferrous deposits including several years in South America; sales, sales promotion and product development of earth moving and drilling equipment, and explosives. Experienced in United States Government contracts. PW-2942, Engineering News-Record.

Mechanical Engineer, eighteen (18) years experience in all phases of mechanical work, usually associated with large consulting engineering offices in New York City, including petroleum piers, oil pipelines, tank forms, airports, tunnels, roads, buildings, etc. Position desired should be of responsibility level, involving reports, design, specifications, bid analysis, supervision, etc., New York or vicinity, Box PW-2944, Engineering News-Record.

Dirt and Construction Superintendent, wanting job. 28 years experience, sober, honest and capable. Available now. PW-2955, Engineering News-Record.

Civil Engineer 20 yrs. experience mainly water and sewerage. Complete supervision design some supervision construction. Available now. Please specify duties and approx. earnings first reply. PW-2852, Engineering News-Record.

Accountant experience office manager in heavy construction, dams and air field buildings and under ground systems. College major accounting special course industrial management, age 45, married, wife and 1 go anywhere. PW-2897, Engineering News-Record.

Highway engr. twelve years foreign service approaching retirement status seeking connection in consulting capacity—address—PW-2920, Engineering News-Record.

Architect Steel Superintendent or owners representative. Experienced on Public & Industrial buildings. Estimating, expediting & cost control. Available immediately anywhere in U. S. PW-3053, Engineering News-Record.

POSITIONS WANTED

Writer—Engineer seeks solid connection, degrees, experience publications. Salary secondary to right firm. PW-2766, Engineering News-Record.

Field Accountant cost, payrolls, field purchasing & expediting. Available immediately anywhere in U. S. PW-3054, Engineering News-Record.

Prestress Conc. Executive available. Employed, manfg. double tees beams columns piling & bridge sections. Graduate Arch. college: Age early 50s Sales Contacts N Y State. 7 years precast 3 years pretensioned. Interested in managing adequate set up only. Will relocate. PW-3055, Engineering News-Record.

Project Mgr.—General Superintendent—Engineering background—age 44 yrs. with 20 years experience in heavy construction. Industrial with some municipal work. Seeks permanent connection. Prefer South or Southwestern Area but will consider others. Please describe position and state min. salary and benefits. PW-3024, Engineering News-Record.

German graduated Structural Engineer, 58 year, experienced in computations, designs and estimating of bridges, highways and industrial buildings in structural steel and reinf. concrete, incl. prestressed concr. (seven years exper. in Canada and USA), at present employed with a well known German contractors firm, desires position as engineer in USA. Write to Michael Schardt, C. E., (22a) NEUSS/Rh., Muensterpl. 4-6, Germany.

Construction or Maintenance Superintendent (52) Bulk Oil or Gasoline Storage; familiar with the below ground hydraulic; pump and tank, or gravity systems. Army or Navy specifications. Interested in domestic or foreign projects. PW-3019, Engineering News-Record.

Construction Engineer to supervise the construction of School buildings or large industrial plants. Have had 15 years experience in supervising work of this kind. Available the First of October. PW-3025, Engineering News-Record.

Civil EIT, 31, experience asphalt paving design and inspection, surveying, drafting, building construction estimating, materials procurement. Interested in teaching, foreign assignment or municipal engineering. PW-3027, Engineering News-Record.

Const. Supt. BSCE, age 33. Background bldgs., dams, schools, PW-3042, Engineering News-Record.

Asst. Supt. or Supt. on small job. 21 years exp. on varied types of work. All types conc. structures a specialty. Engineering background. Florida Prev. Must be permanent. PW-3011, Engineering News-Record.

Construction Engineer Superintendent. Age 43 BSCE, 20 years office and field experience: roads, airfields, waterworks, sewage, bridge and industrial construction; soils testing. Available for owner or contractor Eastern States. PW-3008, Engineering News-Record.

40 Civ. Struct, Mech, elect, estimating architectural eng's & draftsmen are being transferred and will entertain offers of better positions at this time. Employees of Technical Eng. Division, Miss. Riv. Comm., Vicksburg, Mississippi.

PART-TIME WORK WANTED

Group of Engrs., P.E., 15 yrs. exp., ind. Power Systems, waterworks-pumping, distribution purification-design, maintenance, and operation. PTWW-2996, Engineering News-Record.

ENGINEERS

Are you worth up to

$10,000 A YEAR?

Important permanent positions, paying from $6,500 to $10,000 a year with unusual future opportunity, have been created by the expansion program of our large, long-established engineering and construction firm. We need qualified engineers, designers and draftsmen experienced in structural, concrete, mechanical and piping design. Engineering offices are in several major American cities and Canada. Excellent working conditions. Generous company benefits. Our employees know of this ad.

Investigate this opportunity. Write today, giving age, education and experience. Your inquiry will be kept strictly confidential and will be answered promptly.

P-2652, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

HIGHWAY ENGINEERS
DESIGNERS
DRAFTSMEN

Drainage Engineers

FOR OFFICE WORK IN ST. LOUIS ON HIGHWAYS EXPRESSWAYS AND ASSOCIATED CIVIL WORKS

- *Permanent employment for qualified men*
- *Ample opportunity for advancement based on merit*
- *Generous transportation & moving allowances*

Plus Employee Benefit and Retirement Plan, Paid Vacations, Holidays, Sick Leave. Blue Cross available.

PLEASE WRITE FULLY TO OR INQUIRE AT

SVERDRUP & PARCEL ENGINEERING CO.

1134 LOCUST ST. ST. LOUIS 1, MO.

ELECTRICAL SERVICE ENGINEER

To service Overhead Electric Cranes and Electric Mining Shovels.

Must be willing to relocate in Milwaukee and travel.

E.E. degree or equivalent is required as well as ability to make important service decisions.

This is a high salaried position requiring a top flight man.

Send complete resume to:
Asst. Personnel Director

HARNISCHFEGER CORPORATION

4400 W. National Avenue
Milwaukee 46, Wisconsin

Engineers Architects

Highway Designers—Draftsmen
Rochester & Harrisburg, Pa.

Bridge Designers—Draftsmen
Harrisburg, Pa.-College Park, Md.-Ft. Lauderdale, Fla.

Architectural Designers—Draftsmen
Rochester, Pa.

Civil Engineering Draftsmen

Ink Tracers—Computors
Rochester, Pa.

Air Mail Resume TO R. L. SHAW, *Personnel Director*

MICHAEL BAKER, Jr., Inc.

BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

ERECTION SUPERINTENDENT

Major steel corporation is looking for young man to supervise erection of their new line of wide span fabricated steel buildings for industry and commerce. Excellent opportunity with a growing concern for an aggressive man having construction or engineering background. Must be willing to travel from Virginia to Maine. Age to 35. Salary commensurate with experience and ability. Transportation & expenses furnished. Send full details and snapshot to

P-2841, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIVIL ENGINEERS

Civil Engineers with experience in hydraulics, soils, concrete design, contracts estimating, dams or construction for work on hydraulic structures in Pennsylvania. Salary to $9000. State experience, salary requirements and references.

P-3003, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

RESIDENT ENGINEER AND DEPUTY RESIDENT ENGINEER

To supervise construction of $40,000,000 rockfill dam in the Middle East. Four-year completion schedule. Please send detailed experience and personal record. Specify salary expected and earliest date available.

HARZA ENGINEERING COMPANY
400 W. Madison St. Chicago 6, Ill.

STRUCTURAL and MECHANICAL DESIGNERS

Having experience with heavy material handling equipment

Permanent Position For Qualified Men

HOSPITALIZATION
INSURANCE
VACATION

Phone or Write
Chief Engineer for interview

THE WELLMAN ENGINEERING CO.

7000 CENTRAL AVE.
Cleveland 4, Ohio
Telephone EN 1-0842

ENGINEERS

Highway Design · Traffic Engineers
Architects · Structural Engineers

Recent graduates and experienced design engineers needed.

Company paid hospitalization, life insurance, retirement and holidays. 40-hour week. Send complete experience and education resume with salary requirements to:

Palmer & Baker Inc.
P. O. Box 346
Mobile, Alabama

ENGINEERS, DESIGNERS and DRAFTSMEN

Permanent positions in an Engineering Department involved in all phases of engineering planning and layout, building and machine alterations, new construction, engineering evaluation and new equipment and processes, for our four paper mills in west central New Jersey.

STRUCTURAL—Reinforced concrete, structural steel, industrial plant experience.

MECHANICAL—Steam and power, service and process piping and equipment, heating and ventilating.

MACHINE DESIGN—Paper mill, finishing and converting equipment.

DRAFTSMEN—Senior and Junior, one year minimum general industrial experience.

Please write stating education, experience, salary expected and availability.

RIEGEL PAPER CORPORATION
Personnel Department
MILFORD, N. J.

HEAD STRUCTURAL DESIGNER

To supervise and administer Structural Designing and Drafting Department in home office of long established Boston consulting engineering firm.

Send resume of experience, references and record of past earnings to

P-2992, Engineering News-Record
Class. Adv. Div.,
P. O. Box 12, New York 36, N. Y.

STAFF ENGINEER MAINTENANCE SERVICES

Foreign Employment

To assist and advise operating management on all maintenance services and practices in major oil installation located in Saudi Arabia.

Must be graduate engineer with minimum of 10 years' planning and operations experience in heavy industrial and refinery installations. Proven supervisory ability and thorough knowledge of maintenance craft methods and equipment required. Minimum salary $1000 monthly plus allowances and generous benefits. Excellent promotional opportunities.

Write outlining personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 183

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE
NEW YORK 22, NEW YORK

ENGINEERS!

Immediate career opportunities in oil marketing!

A MAJOR OIL COMPANY . . . .

WANTS—young, personable, capable, sales-minded M.E.'s and C.E.'s with management potential. (Servicemen returning to civilian life within 6 months will be fully considered)

OFFERS—good starting salaries, choice of location within U.S., outstanding benefits, interesting and varied assignments (in sales, distribution and engineering), thorough training, regular appraisal, advancement on merit leading to management positions.

P-2801, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WRITE TODAY—with full details on your background, education and experience.

Unusual Opportunity for EXPERIENCED CONSTRUCTION MACHINERY SALES REPRESENTATIVE

If you are looking for the opportunity to grow with a nationally known manufacturer of road building and construction machinery, this is your chance. We are seeking an experienced man, 30-45 years old, as District Sales Representative with headquarters in Denver to serve the Rocky Mountain area. Technical education or background desirable but most important qualification is experience and ability to supervise selling of concrete construction and road building machinery through distributors. Salary and bonus with all traveling expenses paid. Give personal statistics and experience history in reply. Replies confidential.

CHAIN Belt Company
CONSTRUCTION MACHINERY DIVISION
Milwaukee 1, Wisconsin

CHIEF ESTIMATOR

Estab. N. Y. C. Gen. Contr. Seeking Thoroughly Exper. Man with Public & Private Work Background. Send Resume—Confidential.

P-3041, Engineering News-Record,
Classified Adv. Div., P. O. Box 12,
New York 36, N. Y.

SANITARY ENGINEER

Experienced in water supply and sewage disposal. Preferably with Masters Degree. Growing organization, good salary and opportunity. Middle Atlantic State. Please state full qualifications, experience, references.

P-3038, Engineering News-Record
Classified Adv. Div., P. O. Box 12,
New York 36, N. Y.

VICE PRESIDENT, CONSTRUCTION

CAN YOU RUN A CONSTRUCTION COMPANY? One of our clients, a long established, expanding commercial and industrial building construction firm in Iowa with an Aa A1 rating, needs a man qualified to direct all field operations. Principals to devote more time to other interest. Outstanding opportunity for construction administrator who can take real responsibility and plan for greater accomplishments, with potential to assume complete direction of company. Fine engineering, estimating, and business staff. An excellent salary, unlimited earning potential. Completely confidential; our employees know of this ad. Write, giving full details of experience and personal background. L. T. Dickson.

McMURRY, HAMSTRA & COMPANY
332 South Michigan Avenue
Chicago 4, Illinois

CHIEF ESTIMATOR

Well known New Jersey General Contractor needs qualified man to head Estimating Dep't., Degree Preferred. Engineering background necessary. Must have at least 10 years of successful bidding experience in all phases of heavy construction, such as Highways, Structures, Dams, Drainage, etc.

Salary $10,000.00 up. Unlimited opportunity for properly qualified man. All replies confidential. Our employees know of this ad.

P-2999, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIVIL ENGINEER

With municipal experience on sewers and pavements to supervise field construction. Permanent position under Civil Service with retirement plan.

APPLY PERSONNEL DIRECTOR
City Hall, Royal Oak, Michigan

TOP-FLIGHT

ENGINEERS
DESIGNERS
DRAFTSMEN

McKEE has openings for top men to fill important, permanent positions, with excellent prospects for promotion to supervisory, staff and executive posts in our expanding organization.

Our Metals, Refinery and Industrial Divisions offer you wide choice of opportunity to make fullest use of your talents in the design of refineries, blast furnaces, steel, sintering, chemical and industrial plants and their auxiliaries.

Investigate the advantages of top compensation, ideal working conditions, employment security, advancement opportunity and many generous benefits available to you at McKee.

Telephone TOwer 1-2300, Cleveland, Ohio or write to Edward A. Kolner, Arthur G. McKee & Company, 2300 Chester Ave., Cleveland 1, Ohio

Arthur G. McKee & Company

Engineering offices in

CLEVELAND, OHIO • UNION, N.J. • TORONTO, ONT.

THINK

For your family:

Excellent climate, good housing for rent or purchase, 10 to 15 minute drive to office, good schools including a junior college, excellent facilities for golf and all water sports, 3 hours drive to beaches or mountains.

For you:

Opportunity for practicing and advancing in the Engineering Profession in an atmosphere of friendliness and competence.

Our goal is to provide timely service to our clients, proper compensation and recognition to our staff, and dignity to our profession.

Engineers and designers are needed to increase our staff in the following departments

Structural	3 men	5 to 7 years experience
Sanitary	1 man	7 to 10 years experience
Highway	8 men	4 to 10 years experience
Electrical	1 man	7 to 10 years experience
Process	1 man	15 to 20 years experience
	2 men	5 to 10 years experience

Submit experience resumes and references. Interviews will be arranged

PATCHEN AND ZIMMERMAN, Engineers

AUGUSTA, GA.

Plan Your Future with BECHTEL in California on Hydro Electric Power Design

- Work in Los Angeles
- Liberal relocation allowances for you and your family
- Excellent facilities in area for advanced education
- Advancement based on merit
- Organized program of Personnel Development
- Personal accident insurance paid by the company
- Group insurance with liberal company assistance
- Opportunities in diversified types of engineering and drafting
- Contact with latest technological developments
- Air conditioned modern offices.

Immediate Openings

Supervising Engineers

Hydraulic Experience

Engineers

Civil
Hydraulic
Structural
Electrical
Mechanical

Designers

Piping
Electrical
Structural

Men experienced in design of earthfill or concrete dams, spillways, penstocks and hydro electric power stations are desirable. Allied experience acceptable.

Send resume to
Manager of Employment & Placement
Industrial Relations Division

BECHTEL

Corporation

220 Bush St., San Francisco 4, Calif.

For an immediate personal interview you may phone:
Paul Keating, Plaza 7-4400, New York City
Joe Braddick, Fairfax 3-2401, Houston, Texas
Bill Milligan, Tucker 1549, Los Angeles, Calif.
Don Palmer, Douglas 2-4032, San Francisco, Calif.

SANITARY ENGINEER

Experienced in industrial wastes with emphasis on biological treatment. Chemical background desirable.

SANITARY DESIGNER

On Municipal and industrial waste projects.

To arrange for interview phone or send resume to

Miss Ferguson
Wisconsin 7-4600

GIBBS & HILL, Inc.

461 Eighth Avenue
New York, N. Y.

CIVIL and STRUCTURAL

ENGINEERS
DESIGNERS
DRAFTSMEN

Permanent positions for qualified personnel experienced in civil, soils, drainage, railway, highway and structural engineering for work on:

BRIDGES and BUILDINGS
HYDROELECTRIC PROJECTS
INDUSTRIAL FACILITIES
AERONAUTICAL TEST FACILITIES
FLOOD PROJECTS

Openings available in our St. Louis and San Francisco offices.

Please furnish full particulars in regard to education, experience and salary history, salary requirement, and date available.

SVERDRUP & PARCEL, INC.

Engineers—Architects

915 Olive Street St. Louis 1, Mo.

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

HARZA ENGINEERING CO.

400 W. Madison St. Chicago 6, Ill.

CLASSIFIED

SEARCHLIGHT SECTION

ADVERTISING

BUSINESS OPPORTUNITIES — **EQUIPMENT - USED or RESALE**

UNDISPLAYED RATE:

$2.10 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

PROPOSALS $2.10 a line an insertion.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED RATE:

The advertising rate is $23.60 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW Ads or Inquiries to Class. Adv. Div. of Engineering News-Record, P. O. Box 12, N. Y. 36, N. Y. October 11th Issue Closes Sept. 28th.

CONSTRUCTION EQUIPMENT SPECIALS

ECA REBUILT

1—15-ton American Terry Mdl 175 Steel Erectors guy derrick, 85' mast, 75' boom. Capacity 15 tons @ 30'. Perfect condition.

1—American Terry 530-70 steel stiffleg derrick, 70' boom, 12' bullwheel. Cap. 6 tons @ 48' rad. with 70' boom; 10 tons @ 28' rad. with 50' boom. Excellent condition.

1—Ingram steel stiffleg derrick, 50' boom, 23' 8" mast, 8' bullwheel. Cap. 4 tons @ 28' rad. Excellent condition.

1—Chicago Pneumatic Tool 600' rotary compressor, G. M. diesel eng., spring mounted. 4 pneu. tires. Excellent condition.

1—Koehring Mud Jack Mdl 50-2A, gasoline powered. 200 cu. ft. per hr. 250# pressure. Like new.

Write for New Stock List No. 456

EQUIPMENT CORPORATION OF AMERICA

PITTSBURGH 30, PA., Box 933J
CLIFTON HEIGHTS, PA., Box 608J
CHICAGO 4, ILL., 327J S. La Salle St.
NEW YORK 7, N. Y., 30J Church St.

FOR SALE

1—Rex 27-E Paver.....$3,500.00

2—International-Harvester TD-18 Tractors with PCU.....ea. $3,500.00

2—DW-10 Caterpillar Tractors with scrapers .....ea. $10,000.00

2—Bucyrus-Erie Model S-112 10-14 Yd. Tractor Drawn Scrapers..ea. $2,500.00

1—Bucyrus-Erie Model S-152 16-21 Yd. Tractor Drawn Scraper.....$4,500.00

1—LeTourneau-Westinghouse "C" Tournapull with E-16 Scraper or Rocker Body ea. $12,500.00

1—Lorain Model 75-B diesel powered one yard Backhoe $3,500.00

1—Michgian Model C-16 gasoline powered ½ Yd. Backhoe $11,000.00

1—American Model 375-BC diesel powered ¾ Yd. Shovel (New).....$18,000.00

Call or Write for
Complete Used Equipment List

Furnival Machinery Co.

Lancaster Ave. at 54th St.
Philadelphia 31, Pa. TRinity 7-5200

JAW & GYRATORY CRUSHERS
DRYERS, KILNS & COOLERS
FEEDERS
PULVERIZERS
BALL MILLS
ROD MILLS
FLOTATION EQUIPMENT
MINE HOISTS
COMPRESSORS
SHOVELS & CRANES
BRIDGE CRANES
CRAWLER CRANES

WE BUY AND SELL EQUIPMENT THROUGHOUT NORTH AND CENTRAL AMERICA

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300 — 3-8301

FOR SALE—USED LE TOURNEAU EQUIPMENT

2—Super C Tournapulls with 15 cu. yd. Scrapers

2—Tournadozers

3—B.33 Tournapulls with 35 cu. yd. Scrapers

Equipment in good working condition.

Over $100,000.00 inventory of spare parts. List can be furnished on request. Offers invited

J. N. HARRIMAN & CO. LTD.
P. O. Box 232, Port-of-Spain,
Trinidad, B.W.I.

FOR SALE

1—1956, Lorain Model L-85 Crawler Mounted Shovel, Diesel, with 2½ yd shovel and 70 ft. crane boom.
1—1954, Lorain Model L-41J Crawler mounted Backhoe, gasoline, with 40" wide Hoe bkt. and 30 ft. crane boom.
1—1954, Lorain Model MC-424, Moto-Crane, gasoline, with 70 ft. crane boom.
1—1952, Lorain Model TL-25J Crawler mounted Backhoe, with 36" wide Hoe bucket, gasoline.
1—1954, Lorain Model TL-25K Crawler mounted Backhoe, gasoline, with 36" wide Hoe bucket and 40 ft. crane boom.
1—1954, International Model TD-9 Modified Crawler Tractor with Hough 1 cu. yd. front end loader.
1—1953, International Model TD-24 Crawler Tractor with Cable Bulldozer and Power Control Unit.
2—1952, International Model TD-24 Crawler Tractors with Cable Bulldozers and power control units.

Construction Equipment & Supply Co., Inc.
P.O. Box #44 GEneva 8-5150 East Rutherford, N.J.

JAEGER BP5 Bituminous Paver, crawler mounted, self-propelled, adjustable 5'6" to 12'6" width. FOB Davenport, Iowa. $7950

REX Model 34-E Paver, single drum, powered by GMC 3-71 engine, auxiliary water pump, hydrocycle control and standard horizontal 35' distributor boom. Very good condition. FOB Davenport, Iowa. $8250

Call—Write—Wire

MARTIN-ROASA TRACTOR & EQUIPMENT CO.
Davenport — Cedar Rapids

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON CONSTRUCTION CONSULTANTS
P.O. Box 921 — Lake Worth, Florida

IDEAL LOCATION FOR EXPANDING ENGINEERING & DESIGN FIRM

139 DUANE ST. Near City Hall Area New York City

13,000 sq. ft.—at $1.00 per sq. ft.

24 hr. elev. service. Light, airy, spacious. Near all subway lines, busses & ferries.

N. LERMAN, 280 Broadway, N. Y. 7, N. Y. — WOrth 4-2890

TRUCK MIXERS

3—REX Adjusta-Hite, 4½ cu. yd. Mounted on International Tandem Trucks. All in Excellent Condition. Mixers and Trucks purchased new September 1950 and 1951.

ANDERSON EQUIPMENT CO.
Box 1737, Pittsburgh 30, Pa.
Phone: LEhigh 1-6020

LIMA 44 25 TON CAPACITY CRANE

50' boom. Rudomatic Group C Counterweight. Excellent Condition.....$19,500.00

Available Immediately

EDWARD EHRBAR, INC.
29 Meserole Avenue, Brooklyn 22, New York
EVergreen 3-5000

2—87 HORSEPOWER AMES PACKAGE TYPE BOILERS

NEVER USED. Model MC90 Cyclotherm Fire Tube —steam per hour 2600E 125# PSI. Oil fired #2 or #3.

EVEREADY SUPPLY CO.
803-5 Housatonic Ave. — Bridgeport 4, Conn.

BRAND NEW PARTS FOR SALE

For White Engine—Model 782 and 788. Ford V-8 Engine—Models 09B and 8MB. Attractive low prices. Write for list.

Commonwealth of Puerto Rico
PUERTO RICO PORTS AUTHORITY
P. O. Box 3508 — San Juan, P. R.

Whirley portal gantry crane, American ft-15.
Johnson concrete batching, mixing plants (2).
Stiffleg derricks, 75, 35 and 20-ton; hoist.
Rotary kilns, dryers, 9x140, 10½x101, 7x110, 6x60.
Plymouth 35 and 25-ton gasoline locomotives.
Colby hammerhead crane, 300', 14-ton.
Derrick boat, steam, 20-ton, 85' boom.
Tugboat, 69' steel, 500 HP diesel; Great Lakes.
Shovels, Lima 1201, P&H 1055, Bucyrus 170B, etc.
Cranes, walking draglines, gold placer dredges.
H. Y. SMITH Co., 828 N. B'way, Milwaukee 2, Wis.

STRUCTURAL ENGINEERING

ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.

Write today without obligation

WILSON Engineering Corp

College House Offices HARVARD SQ. CAMBRIDGE MASS.

GOOD USED COAL STRIPPING EQUIPMENT

9-W Bucyrus Erie Drag, 165', 10 yd.
625 Page Diesel Drag, 150', 10 yd.
625 Page Diesel Drag, 160', 9 yd.
6160 Bucyrus Monighan Elec. Drag, 160', 8 yd.
621 Page Diesel Drag, 135', 5 yd.
621 Page Diesel Drag, 125', 7 yd.
7200 Marion Drag, 120', 7 yd.
200-W Bucyrus Monighan Drag, 140', 6 yd.
2400 Lima Drag, 120', 6 yd.
4500 Manitowoc Drag, 140', 4 yd.
620 Page Diesel Drag, 115', 6 yd.
4500 Manitowoc Drag, 120', 5 yd.
120-B Bucyrus Erie Elec. Drag, 115', 5 yd.
111-M Marion Drag, 80', 5 yd.
1055 P&H Drag, 110', 4 yd.
1201 Lima Drag, 85', 3 yd.
3500 Manitowoc Drag, 80', 2½ yd.
1001 Lima Drag, 80', 2½ yd.
955 P&H Drag, 100', 2½ yd.
54-B Bucyrus Erie Drag, 85', 2½ yd.
80-D Northwest Drag, 65', 2½ yd.
170-B Bucyrus Erie Elec. 6½ yd. Shovel
1600 P&H Elec. 6 yd. Shovel
1500 P&H Elec. 5 yd. Shovel
120-B Bucyrus Erie Elec. 4½ yd. Shovel
111-M Marion 4 yd. Elec Shovel
111-M Marion 4 yd. Diesel Shovel
1055 P&H 3½ yd. Shovel
1201 Lima 3½ yd. Standard Shovel
111-M Marion 3 yd. High Lift Shovel
1201 Lima 2½ yd. High Lift Shovel
3500 Manitowoc 3 yd. High Lift Shovel
80-D Northwest 2½ yd. Shovel
54-B Bucyrus Erie 2½ yd. Shovel
38-B Bucyrus Erie 1½ yd. Shovel
25 Northwest ¾ yd. Shovel
22-B Bucyrus Erie ¾ yd. Shovel
Unit 1020 ¾ yd. Shovel
802 Lima Cranes
600 Reich Heavy Truck Mounted Rotary Air Drills (Both Lever Arm and High Mast)
58-BH Joy Champion Rotary Air Drills
Quarrymaster Drill—with 2—500 c.f. Compressors
Also 42-T, 29-T and 27-T Well Drills

EUCLID TRUCKS — Many to Choose From

FRANK SWABB EQUIPMENT CO., Inc.

313 Hazelton Nat'l. Bank Bldg.

Hazelton, Pa. GLadstone 5-3658

PRICE AND QUALITY IN FIVE USED EQUIPMENT BUYS

Marion 93M 2½-yard Shovel powered by Caterpillar D-17000 diesel engine. Location Robbinsville, N. J. Excellent condition. No repairs required. (New price over $75,000.00) $38,000.00

Allis-Chalmers Model HD-15 Diesel Crawler Tractor equipped with Baker Cable Bulldozer and Double Drum Power Control Unit. Ready to work. $6,500.00

Caterpillar D-6 equipped with pipe-laying side boom and cable bulldozer blade. $5,300.00

Koehring 205 Crawler Backhoe. GM diesel power. New December 1955. Used four months only. 60-day warranty. $15,000.00 (Today's new price—$20,000.00)

Allis-Chalmers HD-5G Front End Crawler Shovel. $3,500.00

FRANTZ EQUIPMENT CO.

WYNNEFIELD AVE. & 50TH ST. PHILADELPHIA 31, PA.

GReenwood 7-7200

EUCLIDS

Used 13 yd. bottom dumps

Cummins & General Motors Powered

Located - Texas - Pa. - N. Y. State

Write, wire or Phone

L. B. SMITH, INC.

Camp Hill, Penna.

Tel: Harrisburg, Regent 7-3431

FOR SALE

Patterson Ball Mill, 5' x 22'—Unused
6' x 22' Hardinge Conical Ball mill
Rotary Steam Tube Dryer—4' x 20'
Rotary Hot Air Dryer—3' x 24', 4'6" x 40', 5'6" x 50', 4'6" x 32'.
8" x 10" Sturtevant Jaw Crusher
Hoists, Cranes, Conveyors

We pay for your surplus; send us your listings

PERRY EQUIPMENT CORP.
1410 N. 6th St. ST 4-7210
Phila. 22, Pa.

DON'T WAIT
WF-H BEAMS
PILE SECTIONS
NEW · USED · IN STOCK

8" B P	36#	19/35'
10" B P	42#	45/50'
12" B P	53#	60/65'
14" B P	73#	60/65'
14" B P	89#	60/65'

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

Call HY DRACHMAN STEEL CORPORATION
14-23 34th Ave., Astoria, N. Y.
Phones: AStoria 8-4484 8-8023

If there is anything you want that other readers can supply
OR . . . something you don't want— that other readers can use—
Advertise it in the SEARCHLIGHT SECTION

8½ YD. SMITH TRUCK MIXER
Used as Demonstrator for short time.
Excellent Condition.
Hodge & Hammond, Inc.
720 Garrison Avenue, Bronx, N. Y. C.
New York Phone—Kilpatrick 2-2400
New Jersey Phone—Market 3,5424

LORAIN 820
2 yard shovel
Rebuilt and Guaranteed. Powered by Waukesha WAKD Diesel. Available Immediately.
EDWARD EHRBAR, INC.
29 Meserole Avenue Brooklyn 22, New York
Evergreen 3-5000

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

- DROP HAMMERS
- DRIVING CAPS
- STEEL LEADS
- PILE DRIVER HOSE
- HOISTS AND BOILERS
- STEEL SHEET PILING

CONMACO — CONTRACTORS MACHINERY COMPANY
820A KANSAS AVE., KANSAS CITY, KANS. • DRexel 1-3930

3 — Manitowoc Cranes

New 3000-B—50-Ton Capacity
Any length Booms, 30 Ft. Jibs,
Open Throat Boom Points,
Independent Boom Hoists,
18'-4" Crawlers, 33" Treads.
1—New Never Used; 1—1 yr. Old; 1—2 Yrs. Old
ALSO
2—Model 2000 Cranes, 25-Ton Capacity

ANDERSON EQUIPMENT COMPANY
Box 1737, Pittsburgh 30, Penna.
Phone: LEhigh 1-6020

FOR SALE or RENT—EASY TERMS
Rebuilt—A 1 Condition
48B Bucyrus Erie Shovel 2 cy Diesel
Northwest Model Shovel, 1½ cy
Comb. Caterpillar D6 & 80 Scraper
10 ton Buffalo Springfield Gas Roller
International Vibro-Tamper
WILLIAMS CONSTRUCTION COMPANY
Box 145 Balto. 20, Md. Murdock 6-6600

EXPORTERS ATTENTION

LARGE ASSORTMENT TRACTORS & SHOVELS

RE-CONDITIONED & USED
Immediately Available for Export
25—International Harvester Tractors, TD-9 to TD-24
7—Lorain Shovels, Cranes & Drags, ½ cu. yd. to 2½ cu. yd.
Caterpillar Tractors, D-7 & D-8's
AND MANY OTHER GOOD BARGAINS
Write, phone or wire for particulars
Allegheny 1-6000
ATLAS EQUIPMENT CORPORATION
635 Ridge Avenue Pittsburgh 12, Pa.

4500 MANITOWOC DRAGLINE

BARGAIN AT $75,000.00

140' Boom, 4 Yr. Bucket
D386 Caterpillar Diesel
Excellent Condition
Pennsylvania Location

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

PIPE

SURPLUS NEW and USED FOR SALE

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT or BUY
FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS
FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION
AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

"FOR SALE"
Located in Cleveland, Ohio

35 Pcs. New Black Steel Pipe,
12" I.D. .375 Wall 40 to 50 Feet Long

12 Pcs. New 12" x 50# I Beams
50 to 60 Feet Long

JAMES D. TOLLE CHERRY 1-0870
GREAT LAKES DREDGE & DOCK COMPANY
213 Euclid Ave. Cleveland 14, Ohio

PILING · PILE FITTINGS · PIPE
CULVERTS · VALVES & FITTINGS
SPECIALISTS IN PRE-FAB. PIPING
ALBERT
PIPE SUPPLY CO., INC.
Berry at North 13 Sts., B'klyn, N. Y.
ALBERT PIPE SUPPLY APS

EST. 1904
DAVIDSON
PIPE COMPANY INC.
One Of The Largest Stocks In The East
Seamless and Welded ⅛" to 36" O.D. All wall thickness Manufactured. Specialty large sizes. Cutting — Threading — Flanging — Fittings — Valves.
Call GEdney 9-6300
80th St. & 2nd Ave., B'klyn 32, N. Y.

GLOBE PIPE & FITTING CO.
VALVES FITTINGS NEW PIPE USED FOR ALL PURPOSES
785 Metropolitan Ave., Brooklyn 11, N. Y.
EVergreen 7-6220

When you need
PIPE . . . fast
use this section, as many contractors do, as a pipe buying directory. It can save you time when you want to know, quickly, where to buy good new or used pipe.

BUCYRUS ERIE 38-B

1½ yd. Shovel Attachment Only

Complete with necessary turntable equipment (no lagging). New in 1952. Excellent condition. Available now, price $4,850.00.

EDWARD EHRBAR, INC.
29 Meserole Avenue, Brooklyn 22, New York
EVergreen 3-5000

FOR SALE or RENT

1—25 Ton Bay City Truck Crane,
95' Boom, New 1952.

B. M. WEISS CO.
Girard Trust Bldg. Philadelphia 2, Pa.

LORAIN Self-Propelled Crane
Model SP254W, 17½ ton with 30' boom and 10' center section plus lifting crane equipment. Late model machine, used less than 3 months. Guaranteed like new—priced at big saving.
Call—Write—Wire
MARTIN-ROASA
TRACTOR & EQUIPMENT CO.
Cedar Rapids

ENGINEERS CONTRACTORS
WE'LL RECLAIM THAT
OLD CAST IRON WATER LINE

I Contract to reclaim your Cast Iron Water Pipe, YOU KEEP ALL PIPE.
II Remove Cast Iron Water Pipe for a percentage of the pipe, YOU KEEP PART OF THE PIPE.
III We'll Buy Cast Iron Water Pipe IN THE GROUND.

EXPERT IN SCIENTIFIC
RECLAIMING CAST IRON PIPE
W. R. Kershaw Steel & Pipe Company
P. O. Box 435 Muskogee, Oklahoma
Phones: MUrray 2-2912
MUrray 2-7671

FOR SALE
PILE HAMMER
McKiernan-Terry Model 10B-3 pile hammer completely overhauled. $2500 FOB Seattle
CONRAD CREIM CO.
8425 First St., Seattle, Wash.

Additional Searchlight Advertising on page 126

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on following pages

NEW ENGLAND

Goodkind & O'Dea

Consulting Engineers

Design and Supervision
Foundations, Structures, Highways

1214 Dixwell Ave. Hamden, Conn.
610 Bloomfield Ave., Bloomfield, N. J.
30 Church St., New York 7, N. Y.

The Clarkeson Engineering Co., Inc.

Engineers and Consultants

Bridges and Highways, Expressways
Investigations and Reports, Supervision of Construction
Traffic and Parking Studies,
Waterfront Facilities

285 Columbus Avenue Boston 16, Mass.

Fay, Spofford & Thorndike, Inc.

Engineers

Airports, Bridges, Turnpikes
Water Supply, Sewerage and Drainage
Port and Terminal Works
Industrial Buildings

Designs Investigations
Supervision of Construction

Boston, Massachusetts

Jackson & Moreland, Inc.

Engineers and Consultants

Design and Supervision of Construction

Reports — Examinations — Appraisals

Machine Design—Technical Publications
Boston New York

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants—Electrical, Steam and Hydraulic Engineering—Investigations, Reports, and Appraisals.

80 Federal Street, Boston, Massachusetts

Metcalf & Eddy

ENGINEERS

Investigations Reports Design
Supervision of Construction and Operation
Management Valuation Laboratory
1300 Statler Building, Boston 16

C. W. Riva Co.

Engineers

Edgar P. Snow Robert C. Barker
John F. Westman John H. Grauss

Highways, Bridges, Tunnels, Airports, Foundations, Sewerage, Water Supply.

511 Westminster St., Providence 3, R. I.

MIDDLE ATLANTIC

Airways Engineering Corp.

Airports, highways, dams, fuel storage, pipe lines, aerial topographic mapping.
1212 - 18th St., N.W.,
Washington 6, D. C.
Phone: REpublic 7-8131

Green Associates, Inc.

Consulting Engineers

Civil, Mechanical, Electrical
Baltimore, Md., Pittsburgh, Pa.

Penniman & Browne, Inc.

Engineering Division

Soils Engineering—Test Borings Load Testing—Asphalt & Concrete Design—Field and Plant Control Steel Inspection—Mobile X-Ray
341 St. Paul Place, Baltimore 2, Md.

Whitman, Requardt & Associates

Engineers—Consultants

Civil—Sanitary—Structural
Mechanical—Electrical

Reports, Plans, Supervision, Appraisals
1304 St. Paul St., Baltimore 2, Md.

Oscar Sutermeister

Consultant on Defense Planning

Surveys, plans, reports for defense industry and target cities on: Evacuation-Shelter-Fallout Cover-Reduction of Vulnerability.

5923 Johnson Ave. Bethesda 14, Md.

Maddox and Hopkins

Engineers and Surveyors

Plane and Geodetic Surveys
Topographic Maps - Photogrammetry

Highways, Utilities, Structures
8506 Dixon Ave., Silver Springs, Md.

Ewin Engineering Corporation

Designers of Port Facilities, Foundations, Industrial Plants, Bridges, Highways, Sewage Disposal and Municipal Projects.
1367 Connecticut Ave. N.W.
Washington, D. C.
Miami, Florida Mobile, Alabama

Berger Associates

Consulting Engineers

Studies, Design, Supervision
Expressways — Airfields
Structures — Foundations

177 Oakwood Ave. Orange, N. J.
Hall Building Second and Locust Sts., Harrisburg, Penna.
Baltimore, Md.

Greer Engineering Associates

SOIL MECHANICS

Foundation Designs and Analyses
Airphoto Soils and Geological Mapping
Field and Laboratory Soil Tests

98 Greenwood Ave. Montclair, N. J.

Joseph S. Ward

Consulting Soil and Foundation Engineer

Site Investigation, Laboratory Soil Testing, Foundation Analysis, Airports, Engineering Reports and Consultation.
605 Valley Rd., Upper Montclair, N. J.

Edwards, Kelcey & Beck

Consulting Engineers

Reports, Design, Supervision
Subways, Expressways, Traffic, Parking
Harbor Works, Bridges, Tunnels
Housing and Industrial Developments
Newark, New Jersey
New York Philadelphia Boston

Porter, Urquhart, McCreary & O'Brien

O. J. Porter & Co.

CONSULTING ENGINEERS

Airports — Highways — Expressways — Buildings — Bridges — Dams — Harbors — Foundations — Stabilization — Pavements
Reports, Designs & Supervision

415 Frelinghuysen Ave., Newark 5, N.J.
625 Eighth Avenue, New York 18, N.Y.
3568 W. Third St., Los Angeles 5, Cal.
1140 Howard St., San Francisco 3, Cal.
516 Ninth Street, Sacramento 14, Cal.

Frank E. Harley and Associates

Consulting Engineers

Design, Surveys, Plans and Construction Highways, Sewerage and Sewage Treatment, Water Supply and Purification, Municipal Problems.
Harley Bldg., 240 Godwin, Wyckoff, N. J.

B. K. Hough

Consulting Engineer
Soils & Foundation Engineering

Site investigations, soil testing, design analysis for earthworks, foundations and pavements, field inspection, engineering reports, consultation.
121 E. Seneca St., Ithaca, New York

Ammann & Whitney

Consulting Engineers

Design and Supervision of Construction of Bridges, Highways, Expressways, Buildings, Special Structures, Airport Facilities.
111 Eighth Ave., New York 11, N. Y.
724 E. Mason St., Milwaukee 2, Wisc.

Barker & Wheeler

Water Supply — Utility and Industrial
Sewerage — Valuations
Sewage Disposal — Reports
Power Systems

New York City, 11 Park Place
Albany, N. Y., 36 State St.

Barstow, Mulligan & Vollmer

Engineers

Surveys, Design & Construction Supervision, Highways, Expressways, Parks — Movable and long span bridges — Prestressed Structures — City Planning and Municipal Engineering

112 West 42 St. New York 36, N. Y.

Bogert and Childs

Consulting Engineers

Clinton L. Bogert Fred S. Childs
Ivan L. Bogert Donald M. Ditmars
Robert A. Lincoln Charles A. Manganaro
William Martin

Water & Sewage Works Refuse Disposal
Drainage Flood Control
Highways & Bridges Airfields

145 E. 32nd St. New York 16, N. Y.

Bowe, Albertson & Associates

Engineers

Sewage and Water Works — Industrial Wastes — Refuse Disposal — Municipal Projects — Industrial Buildings — Reports — Plans — Specifications — Supervision of Construction and Operation — Valuations — Laboratory Service

75 West Street New York 6, New York

Brown & Blauvelt

CONSULTING ENGINEERS

Expressways, Highways, Parkways
Airports, Bridges, Dams, Water Supply

Industrial and Chemical Plants
Sewage Disposal

Preliminary Reports, Engineering Design, Construction Supervision

468 Fourth Ave., New York 16, N. Y.

Buck, Seifert and Jost

Consulting Engineers

Water Supply — Sewerage — Hydraulic Developments—Reports and Valuations.

Chemical and Biological Laboratories.
New York City, 113 E. 10th St.

Cotton, Pierce, Streander, Inc.

Associated Engineering Consultants

Water Supply, Treatment, Distribution
Sewage, Sewage Treatment
Refuse Disposal, Trade Wastes
Power Plants
Reports, Plans, Supervision

132 Nassau St., New York, N. Y.
PO Box 198, Hyde Park 36, Mass.
1405 W. Erie Ave., Phila. 40, Pa.
55 Caroline Rd., Gowanda, N. Y.

Ebasco Services Inc.

ENGINEERS
CONSTRUCTORS
BUSINESS CONSULTANTS

Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering

Two Rector Street New York
209 S. LaSalle Street Chic. 4, Ill.
204 Southland Life Bldg.
Dallas 1, Texas
611 Equitable Bldg. Portland 4, Ore.
1625 Eye Street, N.W. Wash. 4, D. C.

The Giles Drilling Corporation

Engineering Geology Reports
Foundation Investigations
Soil Testing & Test Borings

2 Park Ave. New York 16, N. Y.

Hardesty & Hanover

Consulting Engineers

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Expressways and Thruways
Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris, Inc.

CONSULTING ENGINEERS

Reports • Feasibility Studies • Evaluations • Designs • Port Development
Foundations • Highways and Bridges
Shipyards • Marine Structures • Floating Dry Docks • Graving Docks • Bulkheads • Piers • Wharves • Power Plants • Industrial Buildings

27 William Street, New York 5, N. Y.

1915 Tulane Avenue, New Orleans, La.

Hazen & Sawyer

Engineers

Richard Hazen Alfred W. Sawyer
Water and Sewage Works,
Industrial Waste Disposal,
Drainage
Reports, Designs, Supervision of Construction and Operation

122 East 42nd St., New York 17, N. Y.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations,
Express Highways
Administrative Services

1805 Grand Ave., 55 Liberty St.
Kansas City 8, Mo., New York 5, N. Y.

Hunting Technical Services

Natural Resources Consultants

Geological and soils surveys for engineering, irrigation, agricultural, mineral & oil projects in U.S.A. and overseas.

57 Park Ave., New York 16, N. Y.
London Baghdad Toronto
Johannesburg Sydney Caracas

King & Gavaris

CONSULTING ENGINEERS

Bridges, Highways, Toll Roads
Arterials - Foundations
Reports, Investigations, Surveys
Supervision of Construction

425 Lexington Ave. 18 Mix Ave.
New York West Haven, Conn.

Moran, Proctor Mueser & Rutledge

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

415 Madison Ave., New York 17, N. Y.
Eldorado 5-4800

Parsons, Brinckerhoff, Hall & Macdonald

ENGINEERS

Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Dams, Canals, Traffic Parking and Transportation Reports. Power, Industrial Buildings, Housing, Sewerage and Water Supply.

51 Broadway, New York 6, N. Y.

Malcolm Pirnie Engineers

Malcolm Pirnie Ernest W. Whitlock
Robert D. Mitchell Carl A. Arenander
Malcolm Pirnie, Jr.

MUNICIPAL & INDUSTRIAL

Water Supply - Water Treatment

Sewage and Waste Treatment

Drainage - Sewerage - Refuse Disposal

25 West 43rd St., New York 36, N. Y.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — Additional cards on preceding and following pages

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports

7 E 47th St. New York 17, N. Y.

The Pitometer Associates

Engineers
Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Water Measurements & Special
Hydraulic Investigations

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Waste, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts Assoc.

Weston Gavett - Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals

30 Church Street, New York 7

Praeger-Kavanagh

Engineers

126 East 38th St., New York 16, N. Y.

Sanderson & Porter Engineers

Design
Construction

New York New York

Scheidenhelm, F. W.

Consulting Engineers

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 30 Church Street, New York 7, N. Y.

Seelye Stevenson Value & Knecht

Consulting Engineers

Richard E. Dougherty, Consultant

Airports, Highways, Bridges, Dams, Water Supply, Sanitation, Railroads, Piers, Industrial Plants, Reinforced Concrete, Steel, Industrial Waste Disposal, Foundations, Soil Studies, Real Estate Development

Civil — Mechanical — Electrical

101 Park Avenue New York 17, N. Y.

Severud-Elstad-Krueger

Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Avenue
New York 17, N. Y.

Singstad & Baillie

Consulting Engineers

Ole Singstad David G. Baillie, Jr.

Tunnels, Subways, Highways
Foundations, Parking Garages

24 State St. New York 4, N. Y.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.
Difficult and Unusual Foundations A Specialty.

235 Broadway, New York City 7

Havana, Cuba Lima, Peru
Bogota, Colombia, Caracas, Venezuela,
San Juan, Puerto Rico, Guayoquil, Ecuador.

D. B. Steinman

Consulting Engineer

BRIDGES
HIGHWAYS

Design, Construction

Strengthening, Investigations.

Reports, Advisory Service

117 Liberty St., New York 6, N. Y.

Henry W. Taylor

Consulting Engineer

Water Supply, Sewerage
Refuse Disposal, Incineration
Industrial Developments

151 W. Merrick Rd., Freeport, N. Y.

Tippetts-Abbett-McCarthy-Stratton

Engineers

Ports, Harbors, Flood Control, Power Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

62 West 47th Street, New York City

The J. G. White Engineering Corporation

Design — Construction
Reports — Appraisals

80 Broad Street, New York

Keis & Holroyd

Consulting Engineers
Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings.

Troy, N. Y. Ft. Lauderdale, Fla.

Capitol Engineering Corporation

Engineers—Constructors—Management

Bridges Dams
Planning Airports
Sewage Systems Water Works
Design and Surveys Roads & Streets
Executive Offices, Dillsburg, Penna.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Dams, Water Works, Sewage, Industrial Wastes & Garbage Disposal, Highways, Bridges & Airports, Traffic & Parking — Appraisals, Investigations & Reports.

Harrisburg, Penna.

Branch Offices

Pittsburgh, Pa. Philadelphia, Pa.
Daytona Beach, Fla., Pleasantville, N.J.

Robert W. Lowry, Inc.

Consulting Engineers

Robert W. Lowry M. Lephaluk
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Stress Analysis & Strengthening
237 Pine Street, Harrisburg, Pa.
122 E. 42nd Street, N. Y., N. Y.

Modjeski and Masters

Consulting Engineers

Bridges and other Structures
Foundations
Highways and Expressways

State Street Bldg., Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Aero Service Corporation

Aerial topographic maps — photo-maps for engineering projects anywhere in the world—highways, railroads, cities, power and pipe lines, mining development. Soil studies and electronic surveys of large areas; resources inventories.

210 E. Courtland Philadelphia 20

Albright & Friel Inc.

Consulting Engineers

Water, Sewage, Industrial Wastes and Incineration Problems, City Planning, Highways, Bridges and Airports, Dams, Flood Control, Industrial Buildings, Investigations, Reports, Appraisals and Rates, Laboratory.

3 Penn Center Plaza Phila. 2, Penn.

Day & Zimmerman, Inc.

Engineers

Design, Construction, Management
Reports and Valuations
Public Utilities and Industrials

New York Philadelphia Chicago

Fridy, Gauker, Truscott & Fridy, Inc.

Architects & Engineers

Water, Sewer, Waste Disposal, Roads, Airports, Power & Lighting, Petroleum Facilities, Hospitals, Schools, Public & Industrial Buildings, Reports, Plans, Supervision, Appraisals.

1221 Arch St. Philadelphia 7, Pa.

Justin & Courtney

Consulting Engineers

Joel B. Justin - Neville C. Courtney
Dams and Power Problems, Hydroelectric, River Basin Developments, Water Supply, Foundations

121 South Broad Street
Philadelphia 7, Pa.

The Kuljian Corporation

Engineers • Consultants • Contractors

Power Plants, Airports & Facilities, Highways, Industrial Plants, Water & Sewage Works, Pumping Stations, Flood Control, Irrigation.

1200 N. Broad St., Phila. 21, Pa.

Yule, Sticklen, Jordan & McNee

ENGINEERS

Bridges, Highways, Airports
Design, Investigations, Reports
Supervision of Construction
Civil, Structural, Mechanical & Electrical

309 South Broad St., Philadelphia 7, Pa.
23rd & Market Sts., Camp Hill, Pa.
5564 North High St., Columbus, Ohio

Hunting, Larsen & Dunnells, *Engineers*

Industrial Plants — Warehouses, Office and Commercial Buildings, Steel and Reinforced Concrete. Design and Supervision. Reports.

1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles Inc.

Engineers

Water Supply and Purification Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.

Pittsburgh, Pa.

Peter F. Loftus Corporation

Design and Consulting Engineers

Electrical • Mechanical • Structural
Civil • Thermodynamic • Architectural

First National Bank Building
Pittsburgh 22, Pennsylvania

C. O. Peterson & Associates

CONSULTING ENGINEERS
PLANT DESIGN—AUTOMATION

1301 Clark Bldg., Pittsburgh 22, Pa.

Gilbert Associates, Inc.

Engineers and Consultants

Design and Supervision of Construction
Mechanical • Electrical • Structural • Sanitary • Economic Research • Chemical Laboratory

New York•Reading, Pa.•Washington

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.

Drilling Services

Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling

Main Office
221 W. Olive Street, Scranton, Pa.
Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
200 Magee Bldg., Pittsburgh, Pa.
Box 645—Grand Junction, Colorado
Buchans, Newfoundland

Air Survey Corporation

Photogrammetric Engineers—Surveyors

Large scale topographic maps, air and ground surveying, aerial photography.

1101 Lee Highway Telephone
Arlington 9, Virginia JAckson 5-8500

Frank D. McEnteer

Consulting Engineer

Bridges, Highways, Airports, Industrial Plants. Design, Surveys, Investigations.

504 Baltimore Ave., Clarksburg, W. Va.

SOUTH

Palmer and Baker, Inc.

Consulting Engineers - Architects

Surveys-Reports-Design-Supervision Consultation

Transportation and Traffic Problems
Tunnels-Bridges-Highways-Airports
Industrial Buildings
Waterfront and Harbor Structures
Graving and Floating Dry Docks
Complete Soils, Materials and Chemical Laboratories

Mobile, Ala. New Orleans, La.
Harvey, La.

Rader and Associates

Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings Industrial Plants Reports Investigations Consultations.

111 N.E. 2nd Ave. Miami 32 Florida

Duval Engineering & Contracting Co.

General Contractors

FOUNDATION BORINGS
For Engineers and Architects.

Jacksonville Florida

Law-Barrow-Agee Laboratories, Inc.

Soils Engineers & Consultants

Soil Testing — Soil Boring — Rock Drilling—Load Testing—Field Control —Engineering Studies—Chemical Analysis—Physical Testing
Box 1558 Atlanta 1 Ga.
Serving the entire South

Patchen and Zimmerman Engineers

Bridges, Expressways, Dams, Hydro and Steam Power, Chemical, Process and Industrial Plants, Water Supply and Sewage Treatment, Investigations, Reports, Design, Supervision.

Augusta, Georgia Atlanta, Georgia

Eustis Engineering Company

FOUNDATION AND SOIL
MECHANICS INVESTIGATIONS

Soil Borings *Laboratory Test*
Foundation Analyses *Reports*

3635 Airline Highway
Metairie, Louisiana

CHECK this section whenever you need professional advice.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on preceding and following pages

Southern Mapping & Engineering Co.

Consulting Civil Engineers; Planners and Surveyors;

Airports and Highway design; Water Works and Sewage design; Topography; Tax Mapping; Reports and Investigations; Pipe Line Surveys; Acquisition of Right-of-way.

216½ Commerce Place
Greensboro, North Carolina

MIDDLE WEST

Alvord, Burdick & Howson

CONSULTING ENGINEERS

Water Works	Sewerage
Water Purification	Sewage Treatment
Flood Relief	Power Generation
Drainage	Appraisals

20 North Wacker Drive, Chicago

A. J. Boynton & Co.

ENGINEERS

Fixed and Movable Bridges
Structures
Foundations
Design
Construction

100 N. Wabash Ave., Chicago 2.

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
351 East Ohio St., Chicago 11, Illinois

Ralph H. Burke, Inc.

CONSULTING ENGINEERS

Complete Architectural and Engineering Services
Plans, Supervision, and Reports

Expressways - Grade Separations
Traffic Studies - Parking Structures
Underground Garages - Shore Protection
Parks - Field Houses - Municipal Works
Airports and Air Terminal Buildings

20 North Wacker Drive, Chicago 6, Ill.

De Leuw, Cather & Company

CONSULTING ENGINEERS

Transportation, Public Transit and Traffic Problems

Industrial Plants	Grade Separations
Railroads	Expressways
Subways	Tunnels
Power Plants	Municipal Works

150 North Wacker Drive
Chicago 6, Ill.

79 McAllister Street
San Francisco 2, Calif.

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal

220 S. State Street, Chicago 4

THIS SECTION is available to consulting engineers to contact prospective clients every week or every other week.

Harza Engineering Co.

Consulting Engineers

Calvin V. Davis — E. Montford Fucik
Richard D. Harza
Hydroelectric Plants & Dams
Transmission Lines
Flood Control, Irrigation
River Basin Development
400 West Madison Street — Chicago 6

Hazelet & Erdal

CONSULTING ENGINEERS

Fixed Bridges, Movable Bridges, Industrial Plants, Expressways, Airports, Dams
Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Commerce Bldg., Louisville 2, Ky.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam - - Hydraulic - - Gas
Public Utilities - - Industrials

231 So. La Salle St. — Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision
Chicago

Mobile Drilling Contract Division, Inc.

Soil and Foundation Engineering

Foundation Investigation, Analysis & Design — Earth Dam & Embankment Design — Pavement Design — Compaction Control — Soil Sampling & Testing — Core Drilling.
960 N. Penn St., Indianapolis 4, Ind.

Chas. W. Cole & Son

Engineers - Architects

Sewerage, Water Supply, Bridges, Highways, Toll Roads, Industrial, Municipal and Commercial Buildings

220 W. LaSalle Ave., Central 4-0137
South Bend, Indiana

Westville Engineering Company, Inc.

ENGINEERS AND GEOLOGISTS

Foundation Test Borings, Soil Sampling, Rock Coring, Engineering Geology Surveys—Soil Mechanics, Concrete and Bituminous Laboratory—Field Surveys of Construction Materials—Consultants on Arbitration Matters Concerning Soil Mechanics, Concrete and Bituminous Technology

Francisco J. Cordova, P.E.
President and Chief Engineer
P. O. Box 67 — Westville, Indiana

The Austin Company

Design and Construction

Manufacturing and Process Plants
Airports & Air Transport Buildings
Railroad Terminals and Facilities
Power Plants — Industrial & Institutional
Industrial Office Buildings and Laboratories
Reports and Plant Location Surveys

New York — CLEVELAND — Los Angeles
Chicago — Houston — Oakland
Detroit — Seattle

Havens and Emerson

W. L. Havens — A. A. Burger
J. W. Avery — H. H. Moseley
F. S. Palmer — E. S. Ordway
F. C. Tolles, Consultant
Water, Sewerage, Garbage, Industrial Wastes, Valuations—Laboratories
Leader Bldg. — Woolworth Bldg.
Cleveland 14 — New York 7

The Osborn Engineering Co.

DESIGNING-CONSULTING

Industrial Plants	Office Buildings
Stadiums	Grand Stands
Field Houses	
Bridges	Garages
Laboratories	

7016 Euclid Ave. — Cleveland 3, Ohio

Toledo Testing Laboratory

Engineers—Chemists

Concrete—Soils—Asphalt
Inspection — Research
Tests — Development
Foundation Investigation
Borings—Diamond Drilling
Load Tests
Soils Mechanics Laboratory

1810 North 12th St. — Toledo 2, Ohio

Jones, Henry & Williams

Consulting Sanitary Engineers

Water Works, Sewerage & Treatment
Waste Disposal
Security Building — Toledo 4, Ohio

Daniel E. Gaffney and Associates

Consulting Engineers

PAVEMENTS

Box 570
Madison 1, Wis.
ALpine 5-7253 — 2320 University Ave.

WEST OF MISSISSIPPI

Heron Engineering Co.

Consulting Engineers

For all types of Aerial Tramways, Cableways, and Suspended Structures

2886 South Acoma St.
Denver 19, Colorado

Stanley Engineering Company *Consulting Engineers*

208 S. LaSalle St. Hershey Building
Chicago 4, Illinois — Muscatine, Iowa

Black & Veatch

Consulting Engineers

Water - Sewage - Electricity - Industry
Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

4706 Broadway, Kansas City 2, Mo.

Burns & McDonnell

Consulting and Designing Engineers

P. O. Box 7088, Kansas City 13, Mo.
Telephone DElmar 4375

Harrington & Cortelyou

Consulting Engineers

Frank M. Cortelyou
E. M. Newman — F. M. Cortelyou, Jr.
Movable and Fixed Bridges of All Types, Foundations, and Related Structures
1004 Baltimore — Kansas City 6, Mo.

Russell and Axon

Consulting Engineers

Civil — Sanitary — Structural
Industrial — Electrical
Rate Investigations

408 Olive St. — St. Louis 2, Mo.
Municipal Airport, Daytona Beach, Fla.

Sverdrup & Parcel, Inc.

Engineers—Architects

Bridges, Structures and Reports, Industrial and Power Plant Engineering
915 Olive St., St. Louis 1, Mo.
417 Montgomery St., San Francisco, Calif.

Consult these Specialists

Let them save your time by bringing their broad experience in their specialty to bear on your problems.

Benham Engineering Company

Established in 1909
Design and Consulting Engineers

215 N E 23rd Street
Oklahoma City 5, Oklahoma

Lockwood, Andrews & Newnam

Consulting Engineers

Navigation Facilities — Public Works
Airports — Earthworks — Roads,
Structural, Mechanical — Electrical
Reports — Design — Supervision
Surveys — Valuations
Corpus Christi — Houston — Victoria, Texas

McClelland Engineers, Inc.

Soil & Foundation Consultants

Investigations—Reports—Supervision
Borings & Tests

2640 N. Main — Houston 9, Tex.

National Soil Services

Consulting Engineers

Soils, Foundations, Ground-water
Ralph F. Reuss — Ray E. Hurst
Soil Borings — Laboratory Tests
Foundation Analyses and Reports
Groundwater Exploration and Evaluation

6134 Almeda — Houston, Texas

FAR WEST

International Engineering Company, Inc.

ENGINEERS

Investigations - Reports - Design
Procurement - Field Engineering
Domestic and Foreign
74 New Montgomery St.
San Francisco 5, California

CANADA

T. O. Lazarides, Leunt and Partners

Consulting Engineers

Reports—Design—Construction Supervision Structures and Foundations
Special Analyses
Grids, shells, domes, complex design problems, bridges

79 Scollard St., Toronto 5, Canada

CONSULT THESE SPECIALISTS...

when you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages. Rates for the Professional Services section are:

weekly insertion for	per quarter 6 mos.	12 mos.
small unit	144.90	134.85
large unit	233.90	227.70
bi-weekly insertion		
small unit	82.80	72.45
large unit	134.95	124.20

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — Additional cards on preceding and following pages

FOREIGN

Saenz-Cancio-Martin,

Ingenieros
Design and Supervision
Structural, Topographic, Soils and Hydraulic Engineering.

Ave. de la Independencia 774
Ensanche del Vedado — Habana, Cuba

The Foundation Engineering Company of Puerto Rico

Consulting Engineers

Foundation and Soil Mechanics Investigations, Laboratory analyses, reports and recommendations, design of structures, supervision.
P. O. Box 821, San Juan, Puerto Rico

Charles L. Hilborn & Assoc., Inc.

Architects — Engineers

Surveys, topographic mapping, subdivision studies, land & area planning, development studies, investigations and reports, hotel & tropical residence design and contract supervision.
P.O. Box 215, St. Croix, Virgin Islands
23 Crystal Gade, St. Thomas,
Virgin Islands

INSPECTION & TEST

A. W. Williams Inspection Co.

Established 1931—Member A.C.I.L.

Inspection — Testing — Analyses — Supervision. Foundation Investigations, Soil Borings, Soil Mechanics, Concrete and Asphalt Design and Control, Radiography, Sampling, Calibrations, Timber and timber treatment inspections. Complete testing laboratory service.
Main Office: 208 Virginia St., Mobile, Ala.

THIS SECTION
is available to consulting engineers to contact prospective clients every week or every other week.

The Haller Testing Laboratories, Inc.

Testing and Inspection of Construction Materials for: Expressways—Airports Structures—Bridges

Complete Soils Laboratory

Borings—Drilling—Load Tests

140 Cedar St., N. Y. 6, N. Y.
Boston, Mass. Plainfield, N. J.
New Haven, Conn.

Robert W. Hunt Company

Inspection and Testing of Engineering Materials & Equipment

New York • Chicago • San Francisco
and other Principal Cities

Johnson Soils Engineering Laboratory

Foundation Design - Highway & Airport Pavements - Construction Control - Load Tests - Shear & Consolidation Tests - MOBILE LABORATORIES
193 West Shore Ave., Bogota, N. J.
Bogota-Hubbard 7-4468

Pittsburgh Testing Laboratory

A national service with complete laboratory and inspection facilities.
Laboratories in principal cities.
Main Office: 1330 Locust St.,
Pittsburgh, Pa.

Engineers Testing Laboratory, Inc.

Foundation and Soil Mechanics Investigations
Soil Borings — Laboratory Tests
Foundation Analyses — Reports
3110 Canada Dry Street
Houston 23, Texas

SEARCHLIGHT SECTION

(Continued from page 122)

PUMPCRETE
Current Models Sale or Rent
Engineering Service & Parts
R. T. SHERROD
Concrete Equipment Company
Jones Island, Milwaukee 7, Wis.

PRACTICALLY NEW
310 PARSONS
$21,000.00
Worked only 500 hours.
Bought for a job that "blew up"
H&L removable teeth, Reinforced Boom—Conveyer extension—Diesel. You can't tell from new machine
LATIMER CONSTRUCTION CO.
930 Wyandotte St., Denver, Colo. *Cherry 4-0783*

FOR SALE
1—D8 CaterpillarDozer, Serial 2U17840
1—Transport Trailer—50 Ton Capacity—New May 1956
Charter Oak Construction Co., Inc.
525 Main St. Hartford 3, Conn.

PILING

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

We do a Nation-Wide business in
STEEL SHEET PILING

IMMEDIATE SHIPMENT

156 pcs. 60 ft. Carn. MP-112—Illinois
310 pcs. 60 & 50 ft. Beth. ZP-32—New York
220 pcs. 60-30 ft. Carn. MP-116—Illinois
115 pcs. 50-40 ft. Inland I-23—Kansas
210 pcs. 30 ft. carn. MP-116—Colorado
44 pcs. 25 ft. Carn. MP-115—Kansas
58 pcs. 20 ft. Carn. MP-116—Tennessee
Other Lengths & Sections at Various Locations

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., Chestnut 1-4474, St. Louis, Mo.

RENT STEEL SHEET PILING

Get the exact lengths and sections you need of all standard sections, delivered *on time*—and at Foster's usual low rental rates

H-BEARING PILE
PIPE FOR PILING
LIGHT-WEIGHT STEEL PILING
PILE HAMMERS & EXTRACTORS

L.B. FOSTER CO.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

expert repairs of complete overhauling by skilled craftsmen on all makes and types. Precision guaranteed.

FINE RENTAL INSTRUMENTS
Reasonable rates, on monthly or yearly basis. All instruments guaranteed to be in first class condition.

David White COMPANY
319 W. Court St.
Milwaukee 12, Wis.

STEEL SHEET PILING
418 PCS. 30 FT. AND 40 FT.
LENGTHS CARNEGIE M-116
SEABOARD STEEL CORP.
Tel: 6-1561
4521 S. Tamiami Trail
Sarasota, Florida

When you need
PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING

RAILS
NEW — RELAYING — TRACK ACCESSORIES
MIDWEST STEEL CORP.
502 DAYCHEM BUILDING
CHARLESTON, W. VA.
IMMEDIATE DELIVERY

ADVERTISERS IN THIS ISSUE

Allis Chalmers Mfg. Co. (Tractor Div.) 1
Aluminum Co. of America 4, 5
Amercoat Corp. ..... Third Cover
American Bridge Div., U. S. Steel Corp. 39
American Surety Co. 100
Anthony Co. 43
Armco Drainage & Metal Prod., Inc. Second Cover
Atlas Powder Co. 107
Automotive & Aircraft Div. American Chain & Cable Co. 80

Baldwin-Lima-Hamilton Corp. (Construction Equipt. Div.) 77
Barber-Greene Co. 15
Barco Mfg. Co. 62
Bethlehem Steel Co. 97
Borden Metal Prod. 20
Broderick & Bascom Rope Co. ..... Fourth Cover

Case Foundation Co. 127
Celotex Corp., The 74
Chicago Pneumatic Tool Co. 10
Clow & Sons, James B. 88
Committee on Steel Pipe Research 79
Concrete Reinforcing Steel Institute 72
Connors Steel Div. H. K. Porter Co. 33
Contractor's Service Ltd. 102

Deming Co., The 68
Dicalite Div., Great Lakes Carbon Corp. 8
Dietzgen Co., Eugene 112
Douglas Fir Plywood Assn. 60
Dravo Corp. 63

Ellicott Machine Corp. 94
Euclid Div. G.M.C. 6, 7

Faber-Castell Pencil Co., A. W. 86
Fairbanks Morse & Co. 3
Flexible Road Joint Machine Co. 34, 35
Fort Pitt Bridge Works 11
Foster Co., L. B. 2

B. F. Goodrich Tire Co., Div. of B. F. Goodrich Co. 93
Griffin Wellpoint Corp. 72
Gulf Oil Corp. 29
Gunite Construction Corp. 112

Hendrick Mfg. Co. 96
Hercules Motors Corp. 70
Horn Co., Inc., A. C., Div. of Sun Chem. Corp. 89

Johns-Manville Corp. 69

Kohler Co. 96

Laclede Steel Co. 73
Leap Concrete Co., Inc. 12
LeTourneau Westinghouse Co. 53, 55, 57, 59
Link Belt Speeder Corp. 83
Lock Joint Pipe Co. 16
Lukens Steel Co. 66

Mahon Co., R. C. 56
McCulloch Motors Corp. 112
McGraw-Hill Book Co. 67
McKiernan-Terry Corp. 40
Monroe Calculating Machine Co., Inc. 14

Ozalid Prod. Div. General Aniline & Film Corp. 58

Pittsburgh Corning Corp. 45
Pittsburgh-Des Moines Steel Co. 87
Portland Cement Assn. 71

Republic Steel Corp. 64, 65
Revere Copper & Brass Inc. 91
Robertson Co., H. H. 81

Servicised Prod. Corp. 100
Sherman Prod. Inc. 111
Smith Engr. Works 18

Smoley & Sons Inc. C. K. 90
Solvay Process Div., Allied Chem. & Dye Corp. 38
Standard Steel Spring Div. Rockwell Spring & Axle Co. 101
Superior Concrete Accessories 50

Tectum Div., People's Research & Mfg. Co. 49
Timber Structures, Inc. 92
Truscon Laboratories 52
Tube Turns, Inc. 90

Underpinning & Foundation Co. 90
Union Metal Mfg. Co. 47
Unit Crane & Shovel Corp. 104
U. S. Pipe & Foundry Co. 9
U. S. Steel Corp. 13

Washington Aluminum Co., Inc. 61
Waukesha Motor Co. 46
West Virginia Steel & Metal Mfg. Co. 82
Wild Heerbrugg Instruments, Inc. 61
Wood Co., R. D. 84, 85
Woodward-Dickerson, Inc. 82
Wrought Washer Mfg. Co. 48

Yeomans Bros. Co. 44

Professional Services 123-126

CLASSIFIED ADVERTISING
F. J. Eberle, Business Mgr.

Employment Opportunities ... 115-119
Educational 120
Proposals 112-115
Equipment
(For Rent, Sales Wanted) 120-122, 126

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABC Member

Number of copies of this issue printed 75,227

D. S. Robertson, Advertising Manager
D. J. Cassidy, Business Manager

ADVERTISING REPRESENTATIVES

New York, 36—330 W. 42 St.,
C. D. Neulen, H. T. Olsen
J. C. White

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne

San Francisco, 4—68 Post St.,
J. W. Otterson, R. C. Alcorn

Philadelphia, 3—17th and Sansome Sts.,
D. G. Jensen

Cleveland, 15—Hanna Bldg.,
E. E. Duff, Jr., F. P. DiToro

Detroit, 26—Penobscot Bldg.,
J. A. Houghton

St. Louis, 8—Continental Bldg.,
B. F. Horn

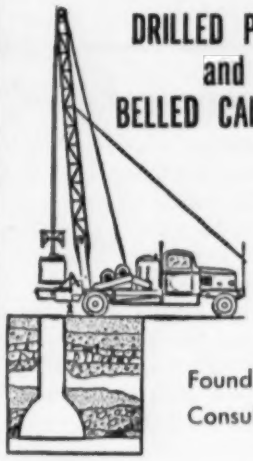
Los Angeles, 17—1125 W. Sixth St.,
H. L. Keeler

Atlanta, 3—Rhodes-Haverty Bldg.,
W. D. Lanier

Dallas, 2, Adolphus Tower Bldg.,
G. Jones, D. C. Billian

OTHER SALES OFFICES:

Pittsburgh, 22—919 Oliver Bldg.,
Boston, 16—350 Park Square Bldg.,
London, McGraw-Hill House



DRILLED PILING and BELLED CAISSONS

Foundation Consultants

Caisson Sizes . 16" to 84"
Bell Sizes . . . . . 2' to 15'
Shaft Depths . . . . to 200'

CASE FOUNDATION Co.
Lake St. & Barrington Rd.
Rt. 1—Roselle, Ill.
Phone (Chicago) . . . Austin 7-3584
Write For Specifications

Stay one jump AHEAD of competition

You are invited to try
CONSTRUCTION DAILY

. . . the Market Letter which helps you get your full share of the most profitable contracts

Get all this advance information—daily!
Proposed Work—$100 Million a Day!
Bids asked—Low Bidders—Contracts Awarded —over $70 Million a Day!
Material Costs, Prices, Shortages
Appropriations for New Construction
These reports name owners, engineers, architects. They give you job descriptions, dates, locations, cost estimates.

How to make more money

Contractors: Let CONSTRUCTION DAILY help you keep a full job schedule, keep your equipment moving, and hold your trained crews together.

Keep ahead of competition with daily reports on what kinds of construction are most active. Know where the most new work is coming into the market. Watch how bids are running. See what new work is moving into the engineers' and architects' offices in preparation for future bids.

Protect your profits with CD's advance warnings of material shortages, price increases, wage rates, etc., etc.

Manufacturers, too, depend on CD for help in increasing sales and lowering costs. Its advance news gives you prospects in plenty time to do your most effective selling job.

FREE Sample—Mail Today

Circulation Manager, CONSTRUCTION DAILY, 330 W. 42nd St., New York 36, N. Y.

Please mail us sample copies of CD with complete information on how this construction market letter can help our business. No charge or obligation. N7-19

Name .....
Firm .....
Type of Business .....
Address .....

Construction at Suez

THE REAL PROBLEM, which Egypt has to solve as a result of her seizure of the Suez Canal, is that of planning and paying for the construction necessary to keep the waterway attractive to traffic and capable of serving it. By comparison, the problem of getting experienced pilots is just a passing worry.

The hard facts are that the Suez Canal is not yet completed, and may require as much as a billion dollars of additional construction over the next 15 years. New construction has been practically continuous over the last 50 years. The eighth program, now at the halfway mark, involves 90 million cu yd of excavation and dredging to widen the canal by 30 ft, deepen it by 2 ft and provide 6 miles of new bypass canal. This will raise the nominal capacity of the canal from 40 to 55 ships a day.

But the long range plans of the canal company had envisioned 180 ships a day! This means a truly big canal because otherwise, as at present, ship speeds of over 8 knots cause dangerous bank erosion. Moreover, to attain a given speed in a narrow channel requires vastly more power than in open water, and the big tankers of the future will want to use their power to transport oil and not to transit a narrow canal.

The Suez Canal will be no asset to anyone unless it can attract traffic. So far, in its half century of existence, some 300 million cu yd of construction excavation and 300 million cu yd of maintenance dredging have been required to keep it attractive. A task of even greater dimensions looms in the future. Construction is the real key to success at Suez.

A Century of Steelmaking

A PROPHETIC ANNOUNCEMENT in the August, 1856, issue of The Engineer (London) called attention to a scientific paper published elsewhere in the issue.

" . . . Mr. Bessemer's new discovery . . . ," the announcement read in part, "if it proves to be all that is represented (and at present there is little reason for doubt), promises completely to revolutionise iron manufacture as at present conducted."

Thus did the magazine cautiously indorse a discovery that indeed proved to be all that was represented. Today, a century after Bessemer built his pioneer blast furnace, the world produces well above a quarter-billion tons of steel a year, much of it in blast furnaces (though Bessemer's method is no longer the leading steelmaking process).

And now, as though to mark the centennial of the blast furnace, the British Iron and Steel Research Association has released a progress report on an experimental method of steelmaking that is said to turn Bessemer's process "almost inside out." Liquid iron ore is sprayed through powdered coal and oxygen, and the result is a recognizable form of steel. The new method cuts out a number of intermediate steps and could herald significant changes in steel manufacture.

Of course, there is little likelihood of an overnight revolution in steelmaking, and the new process, which is still under investigation and development, may prove altogether unimportant commercially. But, coming as it does on the centennary of the Bessemer process, it affords an opportunity to recall that many of our great technological advances date from small, uncertain beginnings. Few, therefore, are too small or uncertain to be ignored.

Urban Roads Are Costly

A NEW HIGHWAY linking the New Jersey Turnpike at Newark Airport with the Holland Tunnel into New York City was opened on Sept. 15. Only a little over eight miles long, it cost $120 million, making it one of the costliest stretches of road ever built; it is not quite the most expensive since Boston's five-mile Central Artery carries a $110 million price tag. The striking fact is that the money required for either of these expressways would pay for between 100 and 200 miles of modern superhighway in open country.

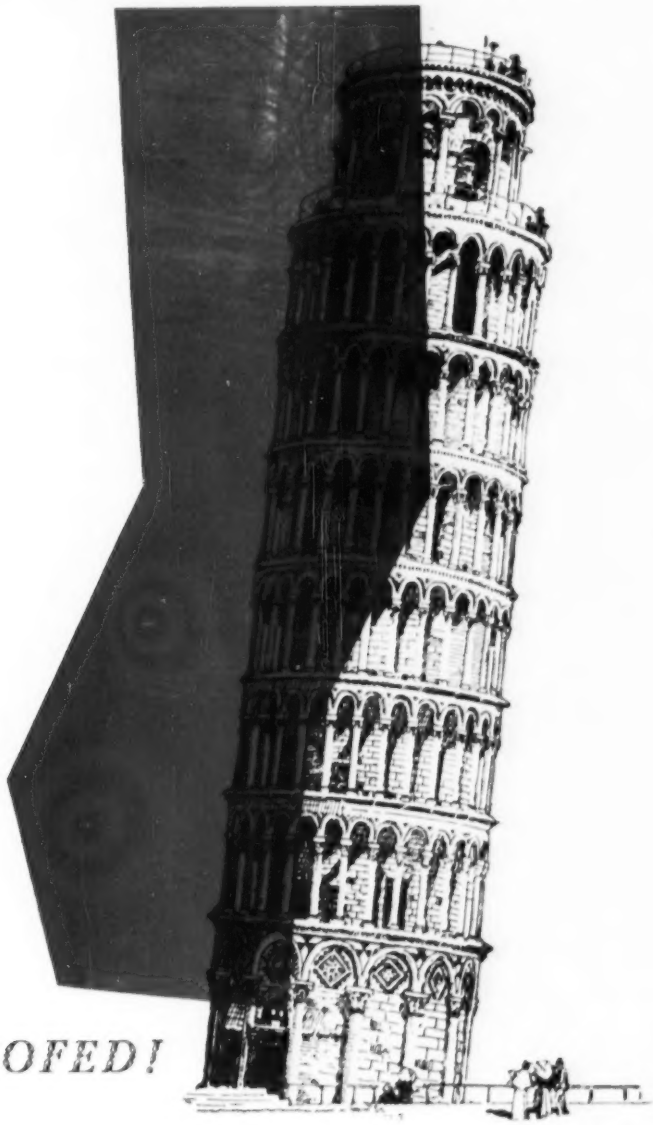
Urban highways, it is clear, are truly expensive. And yet this is not a new phenomenon. In fact, this new section of the Jersey Turnpike is noteworthy for being the second high-priced link between the Holland Tunnel and the state's trunk highways near Newark.

In 1933 the New Jersey Highway Department opened the Pulaski Skyway, a high-level crossing of the New Jersey Meadows and the Hackensack and Passaic Rivers, which, with other viaduct and a deep open cut, extends seven miles westward from the Holland Tunnel. Its cost was something near $30 million, and $4 million a mile was quite as startling in 1933 as $15 million is today.

Actually, of course, such expenditures, even in these times, are not committed lightly. This latest extension of the New Jersey Turnpike was proposed when the turnpike was being built, but its high cost could not be justified by the anticipated revenue. It was the spectacular success of the turnpike in developing traffic far in excess of the engineers' estimates that completely changed the picture.

Whether this costly extension ever will pay its own way remains to be seen. An unusually large volume of traffic will undoubtedly be necessary. But, even though this volume may not prove sufficient, the better service provided would appear to justify spreading part of the carrying charges over the whole turnpike, just as the cost of building the Pulaski Skyway as a free road was spread over the entire state highway system.

Urban roads are costly, but they are needed so badly that ways must be found to build them. On two projects three decades apart, New Jersey has proved it can be done.



SOMEBODY GOOFED!

Only by a freak of fortune does the leaning tower of Pisa still stand. A faulty foundation was not apparent until the structure was three stories high. It is believed the architects were then forced to compensate by adding weight to the opposite side to save the building.

Are you building corrosion problems into your plant structures and equipment that will inevitably have to be compensated for by tremendous replacement costs? Many of these costs can be eliminated *at the planning stage* by taking advantage of the services of an expert in the field of corrosion resistant coatings... the Amercoat Sales Engineer.

The Amercoat Sales Engineer is trained in the principle that in corrosion engineering, too, foundations are all-important. You can put this factory-trained man on your staff, so to speak, without cost or obligation. His advice will be truly objective since it is based on a knowledge of all types of protective coatings and more than 43,000 case histories in our files. You can be sure that the Amercoat coating he recommends, whether vinyl, phenolic, epoxy or any other type, will be the right one for *your* job, and the most economical on the basis of cost per square foot per year.

Therefore, to effect important economies in specifying protective coatings you are cordially invited to call on your Amercoat Sales Engineer... *right at the beginning*. He will analyze all pertinent data concerning your corrosion problems based on our nearly 20 years of corrosion control experience, and give you a comprehensive recommendation. In addition to recommending the proper coatings, he will assist you in writing complete specifications. However, this is not the full extent of his service: he will also be available for consultation at the job site to insure proper application.

There are more than 70 Amercoat Sales Engineers and Distributors located throughout the country. It will pay you to talk to one of these men whether you are building a new plant or are interested in the efficient maintenance of existing facilities. The same service is available and equally important savings can be realized in both cases.

May we send you the name of the Amercoat man nearest you? Literature containing many helpful suggestions for the design and corrosion engineer is also available on request. Write to: Amercoat Corporation, 4809 Firestone Blvd., South Gate, Calif.

"Follow the Line of MOST Resistance"

Amercoat CORPORATION Dept. OI.

4809 Firestone Blvd., South Gate, Calif.

Houston, Texas • Jacksonville, Florida • Evanston, Illinois • Kenilworth, New Jersey

"WE LIKE *Yellow Strand* VERY MUCH. It outlasts other rope."

says:

Edward S. Mando, Contractor, Erie, Pa.

Moving the 72", 5-ton section of concrete pipe into ditch with special hook and pin arrangement welded to shovel. Yellow Strand Wire Rope stands up to heavy load, resists kinking, remains flexible.

This storm sewer contract specifies 11,000′ of storm sewer, including 3,000′ of 72″ concrete pipe. Sections of the concrete pipe weighed well over five tons each . . . this is reported to be the heaviest job of its kind ever to be done in Erie area. The pipe was laid by the same backhoe that dug the trench, and to handle the load, the shovel had to be specially counterweighted.

Edward S. Mando, Erie contractor, knew that he'd need tough, abrasive-resistant and flexible wire rope for the job. He specified Broderick & Bascom Yellow Strand. Speaking from his experience on this contract and many other jobs over the years, he says, "We like Yellow Strand very much. It outlasts other rope."

On the heaviest jobs . . . on the most rugged and demanding wire rope applications throughout the world, you'll find B & B Yellow Strand working as a vital and productive link between the machine and the material being handled. Make sure this link doesn't become a bottleneck for your production. Specify Yellow Strand next time you order wire rope.

BRODERICK & BASCOM ROPE CO.

4203 Union Blvd. • St. Louis 15, Mo.

Manufacturers of Wire Rope for 80 Years

655 Edmunds St., Seattle 8, Wash.
1518 N.W. Marshall St., Portland 9, Ore.
44 Potrero Ave., San Francisco 3, Calif.
117 Jefferson Highway, New Orleans, La.
270 North Street, Teterboro, New Jersey
1330 W. Fulton St., Chicago 7, Ill.
2441 Hunter St., Los Angeles 21, Calif.
9350 Market St. Road, Houston 15, Texas